COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

THE UNION LIGHT, HEAT AND POWER COMPANY	)	
ALLEGED FAILURE TO COMPLY WITH COMMISSION REGULATIONS 807 KAR 5:006, SECTION 26(1)(a) and 807 KAR 5:041, SECTION 3	)	CASE NO. 96-606

O R D E R

The Union Light, Heat and Power Company ("ULH&P") is a Kentucky corporation engaged in the distribution of electricity and gas to the public for compensation for lights, heat, power, and other uses and is a utility subject to Commission jurisdiction. KRS 278.010.

KRS 278.280(2) directs the Commission to prescribe rules and regulations for the performance of services by utilities. Pursuant to this statutory directive, the Commission promulgated 807 KAR 5:006, Section 26, which requires a utility to notify the Commission within two hours of learning that a utility-related accident has resulted in death, shock, or burn requiring medical treatment at a hospital or similar medical facility. In addition, the Commission has promulgated 807 KAR 5:041, Section 3(1), which requires utilities to maintain their facilities in accordance with the National Electrical Safety Code.

The Commission Staff submitted to the Commission a Utility Accident Investigation Report ("Report"), dated October 4, 1996, attached hereto as Appendix A, which alleges that on January 14, 1996 Stephen Carpenter was using a metal pole to clean ice from

the gutters of his home at 2364 Brice Avenue, Fort Mitchell, Kentucky. Mr. Carpenter inadvertently contacted a 7,200 Volt distribution line and was electrocuted. The Report notes two probable violations of Commission regulations: 1) 807 KAR 5:006, Section 26(1)(a), due to the utility's failure to notify the Commission within two hours of learning of the accident; and 2) 807 KAR 5:041, Section 3, due to insufficient clearance under windy conditions between the 7,200 Volt overhead distribution line and a residence. In addition, the Report recommends that ULH&P be required to move the distribution line so that it complies with the minimum clearance requirement under all weather conditions.

The Commission on its own motion HEREBY ORDERS that:

1. ULH&P shall submit to the Commission within 20 days of the date of this Order a written response to the allegations contained in the Report.

2. ULH&P shall appear on February 14, 1997 at 10:00 a.m., Eastern Standard Time, in Hearing Room 1 of the Commission's offices at 730 Schenkel Lane, Frankfort, Kentucky, to present evidence concerning the incident which is the subject of the Report, specifically the alleged violation of Commission regulations 807 KAR 5:006, Section 26(1)(a) and 807 KAR 5:041, Section 3(1), and to show cause, if any it can, why it should not be subject to the penalties of KRS 278.990 for its alleged failure to comply with the aforementioned Commission regulations and why it should not be required to move the overhead distribution line.

3. The Report dated October 4, 1996 is hereby made a part of the record of this case.

4. Any request for an informal conference with Commission Staff shall be set forth in writing and filed with the Commission within 20 days of the date of this Order.

Done at Frankfort, Kentucky, this 26th day of December, 1996.

PUBLIC SERVICE COMMISSION

Linda K Breathitt
Chairman

Edward J Holmes
Vice Chairman

B. J. Helton
Commissioner

ATTEST:

Don Mills
Executive Director

UTILITY ACCIDENT INVESTIGATION REPORT

Utility:	Union Light, Heat and Power				
Reported By:	Donald R. Welch - Senior Safety Engineer				
Dates & Times					
Accident Occurred:	01/14/96 - Approximately 3:40 pm				
Utility Notified:	01/14/96 - 4:05 pm				
PSC Notified:	01/15/96 - 1:50 pm				
Investigated:	01/16/96				
Written Report Rcvd:	01/18/96				
Location of Accident:	2364 Brice Avenue, Fort Mitchell, Kentucky				
Description of Accident:	Mr. Stephen Carpenter was apparently cleaning ice from his gutters with a long metal pole when he inadvertently contacted a 7,200 Volt overhead distribution line.				
Victims:					
Name:	Stephen W. Carpenter	**Fatal:**	Yes	**Age:**	49
Addr./Empl.:	2364 Brice Avenue, Fort Mitchell, Kentucky				
Injuries:	Electrocution				
Witnesses:	**Name**	**Address/Employment**			
	None				
Sources of Information:	**Name**	**Address/Employment**			
	Don R. Welch	ULH&P - Cincinnati, Ohio			
	Jim Kilgore	ULH&P - Cincinnait, Ohio			
Probable Violations:	807 KAR 5:006, Section 26 (1) (a) 807 KAR 5:041, Section 3				

Line Clearances At Point of Accident:	Measured	Minimum Allowed by NESC	Applicable NESC Edition[1]	Volt.	Constr. Date
Phase Conductor to Ground Elevation:	29' - 5"	15' - 0"	1961	7200 V	Upgrade 1973
Neutral Conductor to Ground Elevation:	21' - 2"	15' - 0"	1961	N/A	"
Phase Conductor to Structure:	3' - 8"	3' - 0"	1961	7200 V	"

Span Length	144'
Date of Measurement:	01/16/96
Approximate Temp.:	Approximately 20° - Snow, wind and sleet.

Measurements Made By:	Name	Address/Employment
	Don Welch	ULH&P - Senior Safety Engineer
	Ron Welch	ULH&P - Admin. Risk Management
	Dave Jones	ULH&P - Claims Supervisor
	Jim Kilgore	ULH&P - Safety/Training Coordinator
	Ken Toebbe	ULH&P - District Supervisor
	Terry Maher	ULH&P - Senior Lineperson A
	Jim Rauh	ULH&P - Lineperson A
	Bob Ueltschi	PSC Engineering Staff
	John Land	PSC Engineering Staff

[1] Current edition adopted by the Commission. If clearances are not in compliance with the current edition, then the edition in effect when the facilities were last constructed or modified would apply.

Investigated By:	Bob Ueltschi and John Land, PSC Engineering Staff
Signed:	

Attachments:

A. Union Light, Heat & Power's Accident Report
B. Correspondence
C. Photographs
D. Staff Engineering Report
E. Accident Notification Listing and ULH&P's Acknowledgement

Attachment A

Union Light, Heat & Power's Accident Report

Cinergy Corp.
139 East Fourth Street
P.O. Box 960
Cincinnati, OH 45201-0960

CINERGY.

January 18, 1996

Ms. Martha M. Morton, P.E.
Branch Manager
Engineering Division
Commonwealth of Kentucky
Public Service Commission
730 Schenkel Lane
Frankfort, KY 40602

RE: Steven Carpenter, Electrical Contact Fatality
Date of Accident: 1/14/96

Dear Ms. Morton:

As required by 807 KAR 5:006, Section 26, enclosed is the written follow-up report for the above referenced occurrence for our Union Light, Heat & Power Subsidiary. Our investigation into this accident is continuing in conjunction with the KYPSC Representatives.

There was a delay in notifying the Commission of this accident. Due to our recent merger with organizational changes, this delay was an oversight on our part. The responsibility for making sure this notification is made in a timely manner is being re-communicated to our personnel to prevent a recurrence.

If you have any questions, please contact me at 513-287-2980.

Donald R. Welch

Donald R. Welch
Senior Safety Engineer

ET JOB #: 180 ET8600085 DIST: FK UD055388

SERV ADR: 34 BURDSALL
APT:
FL :
SUBURB : FT MITCHEL KY 41017
PCP:
CUST NAME: THOMAS MOREHEAD
TEL#: NONE

CALLER: MR
NO NEIGHBORHOOD OUT

SPIN:

FDR NAME: KENTON 009 41
FDR ORDS: 7
FDR STAT: IT
URD PAGE: MAP#: K 083
SUPR: 50010
ORTM: 1525 011496
JPTM: 1525 011496

+ A P L P U: :
+ RESTORED: 16 : 25
+ BY CREW: Schnorbus
+ BY CREW:
+ TO SUPR: LL
+ P/D REPORT MADE "?": (Y)
+ TYPE OF REPAIR "?": (T)

CORRECT ADR: (2364 BRICE REAR PROP)

REF TO DIST: (F10 O.H. Safty) SPOKE TO: (FAY #26) TM&DT: (17 45) (1-14-96)

OUTAGE: (P) PROTECTIVE DEVICE OPER: (6) SIZE: (65T) ON P#: (K84-318E)

EQUIP: (60) CO#: ( ) MFG.: ( ) EQUIP SIZE: (1/0 ACSR)

PHASE: ( ) P#: (K84-318E) ADJ P#: (K84-333E) TYPE FLUID LEAK: ( )

LOC IF NOT O/H: ( ) & I/D#: ( ) CAUSE: (8)

REPORT: CUST CONTACTED ~~#~~ PRI, ~~BET P/N K84 - 318 + 333~~ ~~#~~ O.K TEMP. - REQ REPR. - ~~CAN REACH FROM ARIVE with SMALL TRUCK,~~ DONE (CUST CLEANING SNOW FROM ROOF with POLE) JOB OK AT: (:)

P.S.C. EMERGENCY REPORT FORM

DATE 1/15/96 TIME 1:50 PM

COMPANY Union Light, Heat & Power

PERSON MAKING CALL: NAME Donald R. Welch

TITLE Senior Safety Engineer

ADDRESS 139 East 4th Street, Cincinnati, OH 45202

PHONE (513) 287-2980

LOCATION OF OCCURRENCE 2364 Brice

Ft. Mitchel, KY 41017

TIME OF OCCURRENCE 3:40 PM 1/14/96

DESCRIPTION OF OCCURRENCE: DEATHS: YES X NO

INJURIES: YES NO X

ESTIMATED COST OF PROPERTY DAMAGE Unknown

DESCRIPTION Mr. Steven Carpenter was clearing ice from his gutter with long metal pole and contacted 7200 volt distribution line.

EFFECTS ON NORMAL SERVICE service interrupted from 1525 to 1625

ACTION TAKEN service repaired temporarily - permanent repairs being scheduled.

TIME OF RESUMPTION OF NORMAL SERVICE 1625 PM 1/14/96

SIGNED Donald R. Welch

TITLE Senior Safety Engineer

DATE January 18, 1996

INTERNAL CORRESPONDENCE

CINERGY.

TO: Safety & Health Staff

FROM: Don Welch DLW

SUBJECT: Notification of Regulatory Agencies

DATE: January 18, 1996

Attached is the list of regulatory agencies which must be notified when we become aware of injuries to our employees or the public. Please especially note the notification criteria and time limits for the Kentucky Public Service Commission.

If you have any questions, contact me at 287-2980.

cc Jim O'Connor

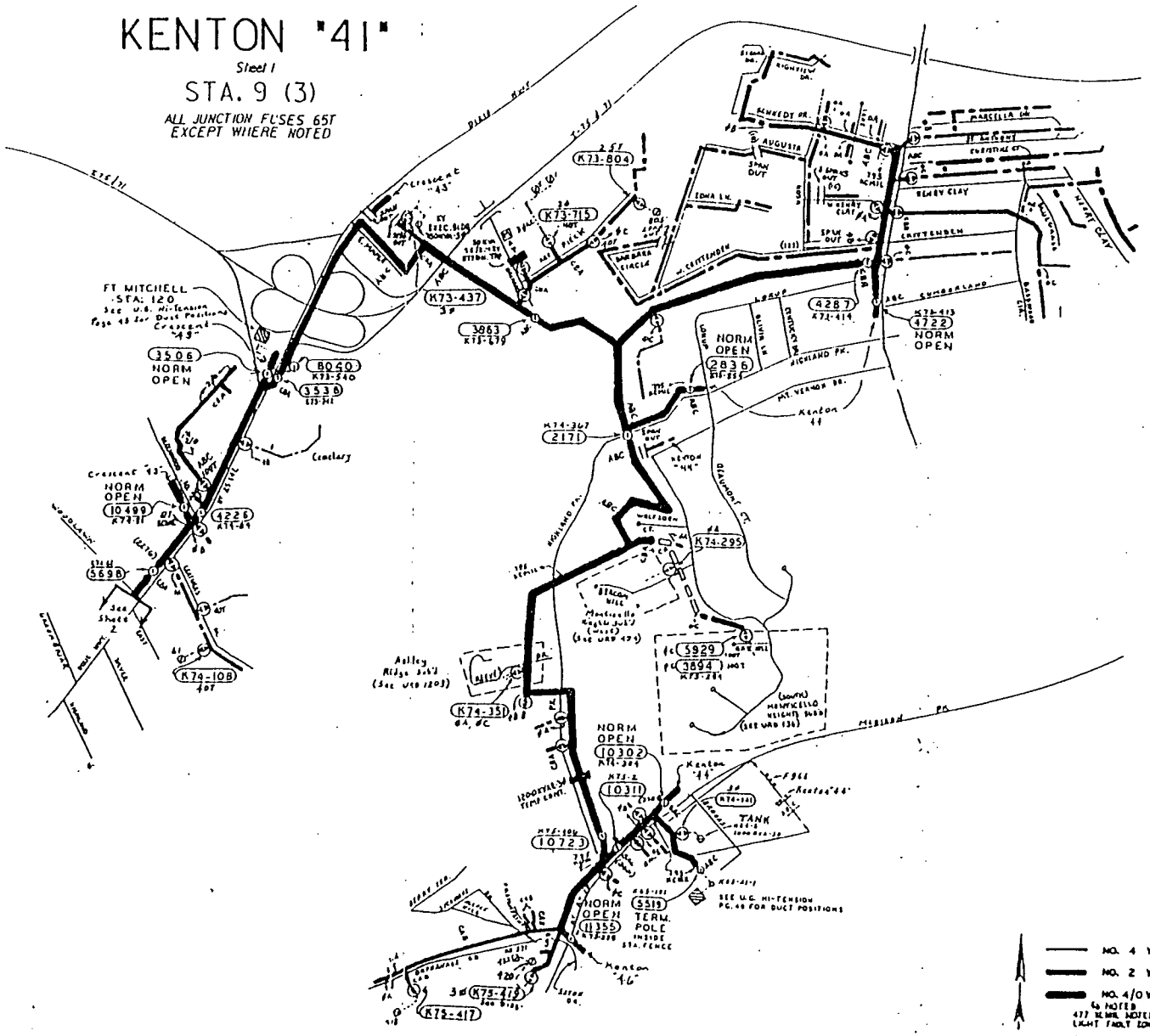
FK JUN 6 1995 AM 8?

KENTON "41"

Sheet 1

STA. 9 (3)

ALL JUNCTION FUSES 65T
EXCEPT WHERE NOTED



FK

AUG 14 1995 PM

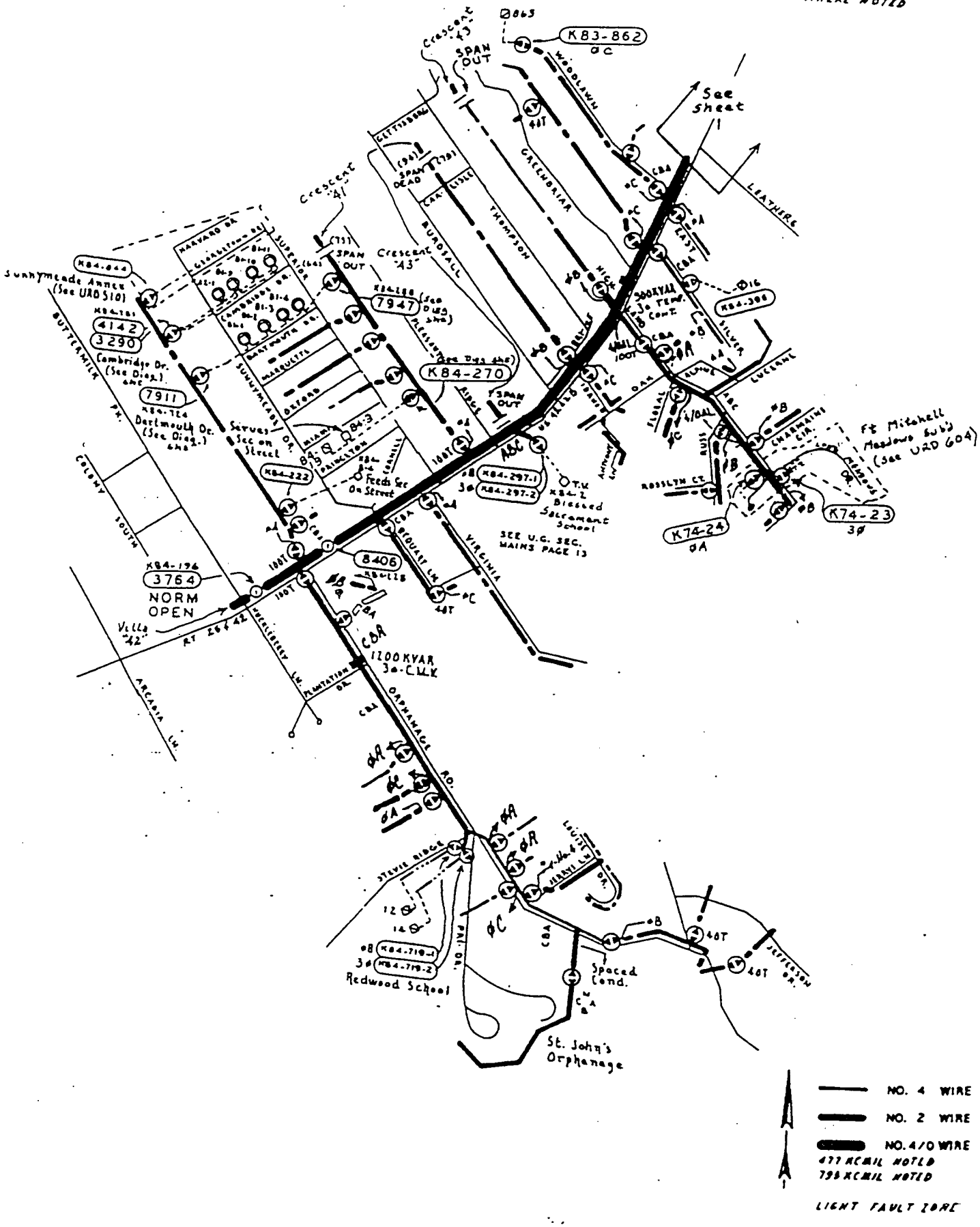
JRH

KENTON "41"

Sheet 2

STA. 9

ALL JUNCTION FUSES 6ST EXCEPT WHERE NOTED



(FK)

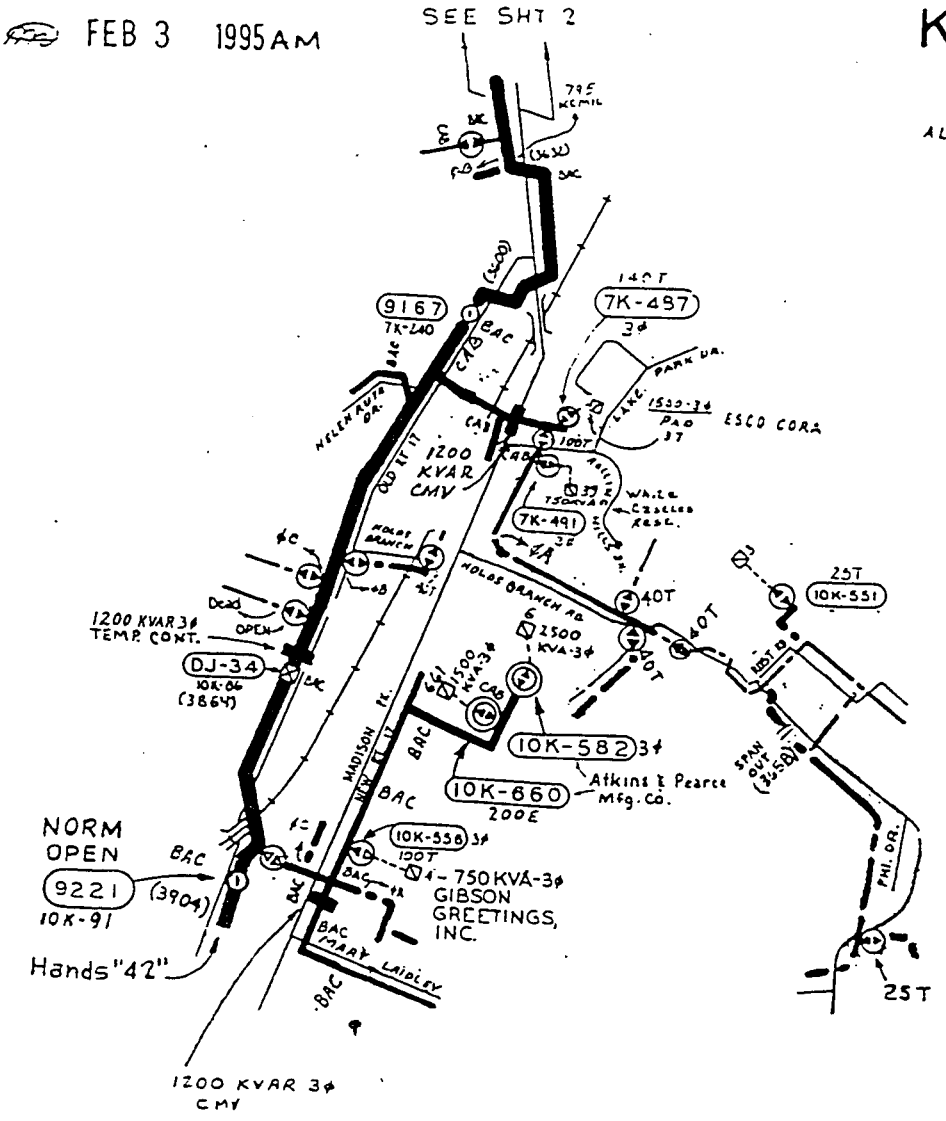
FEB 3 1995 AM

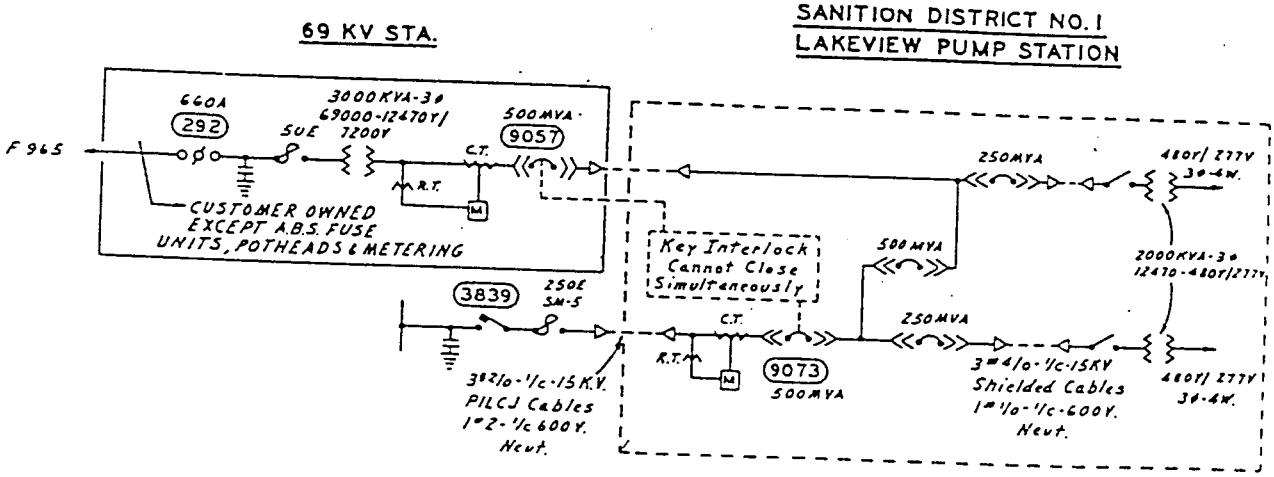
KENTON "41"

Sheet 3

STA. 9

ALL JUNCTION FUSES 6ST EXCEPT WHERE NOTED





NO. 4 WIRE

NO. 2 WIRE

NO. 4/0 WIRE

477 KCMIL NOTED

795 KCMIL NOTED

CINCINNATI GAS AND ELECTRIC COMPANY DATE 1/16/96 PAGE 001
MASS PLANT POLE-LINE INVENTORY OFFLINE PRINTOUT
FOR - DONA ZEH COMMENTS - ACCIDENT INVESTIGATION

	PA	MAP	POLE	DATE	BUD	W.O.	TAX D	AREA	LOCATION	ACCT	CLASS	SIZE	KIND	TREAT	IYR	INS	TLINE	OWN	ORIG
*** POLE	$	K 084	0318	08/29/73		28604	K 010	0200	DIXIE HWY	D	03	045	P	F					

	PA	MAP	POLE	DATE	BUD	W.O.	TO POLE	ACCT	SPAN	SIZE	KIND	NUM	COND	VOLT	TO MAP	TLINE
WIRE	$	K 084	0318	/ /25		00000	0317	D	0112	2/0	WP	1				
WIRE	$	K 084	0318	/ /25		00000	0317	L	0112	6	WP	2				
WIRE	$	K 084	0318	08/29/73		28604	0317	D	0112	336	ACSR	3				

	PA	MAP	POLE	DATE	BUD	W.O.	ITEM	ACCT	NUM	AMP	VOLT	DETAIL	TLINE
EQUIP	$	K 084	0318	08/29/73		28604	CO	D	2	0100			

	PA	MAP	POLE	DATE	BUD	W.O.	TAX D	AREA	LOCATION	ACCT	CLASS	SIZE	KIND	TREAT	IYR	INS	TLINE	OWN	ORIG
*** POLE	$	K 084	0333	/ /62		28021	K 010	0200	THOMPSON AVE PW	D	05	035	P	F					62

	MAP	POLE	DATE	BUD	W.O.	NUM	SIZE	KND
ANCHOR	K 084	0333	/ /62		28021	1		SL

	PA	MAP	POLE	DATE	BUD	W.O.	TO POLE	ACCT	SPAN	SIZE	KIND	NUM	COND	VOLT	TO MAP	TLINE
WIRE	$	K 084	0333	08/29/73		28604	0318	D	0142	1/0	ACSR	1				
WIRE	$	K 084	0333	08/29/73		28604	0318	S	0142	2	WP	1	Last Section Up Shade			

	PA	MAP	POLE	DATE	BUD	W.O.	NUM	SIZE	KIND
SERV	$	K 084	0333	11/11/70		28021	1	4	C
SERV	$	K 084	0333	08/14/86		28009	1	2	C

Cinergy Corp.
139 East Fourth Street
P.O. Box 960
Cincinnati, OH 45201-0960

CINERGY.

February 2, 1996

Ms. Martha M. Morton, P.E.
Branch Manager
Engineering Division
Commonwealth of Kentucky
Public Service Commission
730 Schenkel Lane
Frankfort, KY 40602

RE: Steven Carpenter, Electrical Fatality
Date of Accident: 1/14/96

Dear Ms. Morton:

Per Mr. John Land's request, listed below are our employees involved in taking measurements of the accident site on January 24, 1996:

Don Welch	-	Senior Safety Engineer
Ron Weich	-	Administrator Risk Management
Dave Jones	-	Claims Supervisor
Jim Kilgore	-	Safety/Training Coordinator
Ken Toebbe	-	District Supervisor
Terry Maher	-	Senior Lineperson A
Jim Rauh	-	Lineperson A

If you have any questions, please contact me at 513-287-2980.

Donald R. Welch
Senior Safety Engineer

cc: M. Voorhees

Cinergy Corp.
139 East Fourth Street
P.O. Box 960
Cincinnati, OH 45201-0960

CINERGY.

February 13, 1996

Ms. Martha M. Morton, P.E.
Branch Manager
Engineering Division
Commonwealth of Kentucky
Public Service Commission
730 Schenkel Lane
Frankfort, KY 40602

RE: Steven Carpenter, Electrical Fatality
Date of Accident: 1/14/96

Dear Ms. Morton:

Per Mr. John Land's request, attached is a copy of the Coroner's Report for the above incident.

If you have any questions, please contact me at 513-287-2980.

Donald R. Welch
Senior Safety Engineer

FORM VS NO. 1-A
(Rev. 11/91)

COMMONWEALTH OF KENTUCKY
DEPARTMENT FOR HEALTH SERVICES
REGISTRAR OF VITAL STATISTICS

116 FILE NO.

CERTIFICATE OF DEATH

Registrar's No.

MUST BE TYPED

DECEDENT

1. DECEDENT'S NAME (First, Middle, Last)			2. SEX	3. DATE OF DEATH (Month, Day, Year)
STEPHEN	W.	CARPENTER	Male	January 15, 1996

4. SOCIAL SECURITY NO.	5a. AGE Last Birthday (Years)	5b. UNDER 1 YEAR (Months)	(Days)	5c. UNDER 1 DAY (Hours)	(Minutes)	6. DATE OF BIRTH (Month, Day, Year)	7. BIRTHPLACE (City/State or Foreign Country)
063-38-4005	49					Nov 2, 1946	Geneva New York

8. WAS DECEDENT EVER IN U.S. ARMED FORCES? (Yes or No): Yes

9a. PLACE OF DEATH (Check only one): HOSPITAL ☒ Inpatient ☐ ER/Outpatient ☐ DOA; OTHER ☐ Nursing Home ☐ Residence ☐ Other (Spec

9b. FACILITY NAME (If not institution, give street and number)	9c. CITY, TOWN, OR LOCATION OF DEATH	9d. COUNTY OF DEATH
ST. ELIZABETH MED CTR/SOUTH	Edgewood	Kenton

10. MARITAL STATUS (Married, Never Married, Widowed, Divorced (Specify))	11. SURVIVING SPOUSE (If wife, give maiden name)	12a. DECEDENT'S USUAL OCCUPATION (Give kind of work done during most of working life. Do Not use retired)	12b. KIND OF BUSINESS/INDUSTRY
Married	Charlotte Moher	Manager	Finance/Insurance

13a. RESIDENCE - State	13b. COUNTY	13c. CITY, TOWN, OR LOCATION	13d. STREET AND NUMBER
Kentucky	Kenton	Fort Mitchell	2364 Brice Avenue

13e. INSIDE CITY LIMITS? (Yes or No)	13f. ZIP CODE	14. WAS DECEDENT OF HISPANIC ORIGIN? (Specify No or Yes - If yes, specify Cuban, Mexican, Puerto Rican, etc.)	15. RACE - American Indian, Black, White, etc. (Specify)	16. DECEDENT'S EDUCATION (Specify only highest grade complet	
				Elem/Secondary (0-12)	College (1-4 or 5 -
Yes	41017	☒ No ☐ Yes	White		

PARENTS

17. FATHER'S NAME (First, Middle, Last)	18. MOTHER'S NAME (First, Middle, Maiden Surname)
WILLIAM CARPENTER	BETTY JORDAN

INFORMANT

19a. INFORMANT'S NAME	19b. MAILING ADDRESS (Street and Number or Rural Route Number, City or Town, State, Zip Code)
Charlotte Carpenter, Wife	2364 Brice Avenue Fort Mitchell, KY 41017

DISPOSITION

20a. METHOD OF DISPOSITION	20b. PLACE OF DISPOSITION (Name of cemetery, crematory, or other place)	20c. LOCATION - (City, Town or State)
☒ Burial ☐ Cremation ☐ Removal from State ☐ Donation ☐ Other (Specify)	Highland Cemetery	Ft. Mitchell, KY

21a. SIGNATURE OF FUNERAL SERVICE LICENSEE (Or person acting as such)	22. NAME AND ADDRESS OF FACILITY
David T. Middendorf	MIDDENDORF-BULLOCK FUNERAL HOME 3614 Dixie Highway, Erlanger, KY 41018

CERTIFIER

23a. To the best of my knowledge, death occurred at the time, date and place and due to the causes stated

Signature and Title: Carl E. Nicodus, M. D., Coroner (MUST USE BLACK INK)

23b. DATE SIGNED (Month, Day, Year): 1/12/96

24. NAME AND ADDRESS OF PERSON WHO COMPLETED CAUSE OF DEATH (ITEM 28): David W. Suetholz, M. D. 5522 Taylor Mill Road Taylor Mill KY 41015

25. TIME OF DEATH	26. DATE PRONOUNCED DEAD (Month, Day, Year)	27. WAS CASE REFERRED TO MEDICAL EXAMINER/CORONER? (Yes or No)
6:43A M	January 15, 1996	Yes

CAUSE OF DEATH

28. PART I. Enter the diseases, injuries, or complications that caused the death. Do not enter the mode of dying, such as cardiac or respiratory arrest, shock or heart failure. List only one cause on each line.

		Approximate interval between onset and death
IMMEDIATE CAUSE (Final disease or condition resulting in death)	a ELECTRICUTION	
Sequentially list conditions, if any, leading to immediate cause. Enter UNDERLYING CAUSE (Disease or injury that initiated events resulting in death) LAST	b DUE TO (OR AS A CONSEQUENCE OF)	
	c DUE TO (OR AS A CONSEQUENCE OF)	
	d DUE TO (OR AS A CONSEQUENCE OF)	

PART II. Other significant conditions contributed to death but not resulting in the underlying cause given in Part I

28a. WAS AUTOPSY PERFORMED? (Yes or No)	28b. WERE AUTOPSY FINDINGS AVAILABLE PRIOR TO COMPLETION OF CAUSE OF DEATH (Yes or No)
Yes	Yes

29. MANNER OF DEATH	30a. DATE OF INJURY (Month, Day, Year)	30b. TIME OF INJURY	30c. INJURY AT WORK? (Yes or No)	30d. DESCRIBE HOW INJURY OCCURRED.
☐ Natural ☐ Pending Investigation ☒ Accident ☐ Suicide ☐ Could not be determined ☐ Homicide	1-14-1996	~ 3P M	No	Chipping Ice off A Roof, Hit Power Line

30e. PLACE OF INJURY - At home, farm, street, factory, office building, etc. (Specify)	30f. LOCATION (Street and number or Rural Route Number, City or Town)
At Home	2364 Brice Avenue Ft. Mitchell, Kentucky 41017

REGISTRAR

31. REGISTRAR'S SIGNATURE	32. DATE FILED (Month, Day, Year)

CORONER'S INVESTIGATION REPORT

Called by ST-E South dcu Time 7:10 (AM) PM Date 11/15/96

Name of deceased Steven CARPENTER

Address 9364 Brize Ave Ft Mitchell

Social Security _____ Occupation _____

Place of death SES dcu

Time of death 6:55pm Date of death 11/15/96

Pronounced dead. Time " Date "

Date of birth 11/2/46 Age 49 Sex M Race C

Single (Married) Divorced Widowed Separated

Surviving spouse(maiden name if wife) Charlotte

Father's name _____ Mother's maiden name _____

Informant's name _____ Relationship _____

Address _____ Phone No. 341-5459

Police agency and investigator _____

Last seen alive by _____ Found dead by _____

Personal Physician _____

History Changing dcc after post hit high Tension wire

Funeral Home _____

Verdict Electrocution; Cardiac Arrest

Autopsy (Yes) No. _____ Where St L Sust

PROVISIONAL SUMMARY AND INTERIM REPORT
A96-11

NAME: Steven Carpenter

AUTHORITY: Coroner of Kenton County, Kentucky

BACKGROUND DATA:

Electrocution with high voltage (7000) anamnestic

GROSS EXAMINATION:

Burns and lacerations of integument
Cerebral edema
Generalized edema

PROVISIONAL DIAGNOSIS:

Death, in my judgment, is due to electrocution.

THIS INFORMATION, FINDINGS, AND OPINION WILL BE MODIFIED WITH REVIEW. ADDITIONAL INFORMATION OF SCENE INVESTIGATION, MICROSCOPE EXAMINATION, AND TOXICOLOGICAL STUDIES WILL BE INCORPORATED INTO THE FINAL REPORT.

REPORTING OF INCIDENTS OF REGULATORY AGENCIES

FATALITIES OR THREE (3) OR MORE HOSPITALIZED INJURIES/ILLNESSES WITHIN EIGHT (8) HOURS OF THE INCIDENT

Ohio	U.S. Department of Labor - OSHA	
	Cincinnati Area Office	513-841-4132
	(after normal business hours)	800-582-1708
Kentucky	Kentucky Labor Cabinet	
	KOSHA (24-hour number)	502-564-7360
Indiana	Indiana Department of Labor	
	IOSHA (24-hour number)	317-232-2693

REPORTING OF ACCIDENTS OR PROPERTY DAMAGE TO KENTUCKY PUBLIC SERVICE COMMISSION WITHIN 2-HOURS OF DISCOVERY FOR ANY OF THE FOLLOWING:

- Death; or shock or burn requiring medical treatment at a hospital or similar medical facility, or any accident requiring in-patient overnight hospitalization for Company employees or the public.
- Actual or potential property damage of $25,000 or more to Company facilities or third party property.

Kentucky Public Service Commission
Division of Engineering and Services

Primary Contact	Office	Residence
Martha Morton	502-564-3940	606-272-8158
Bob Ueltschi	502-562-3940	606-268-4256
John Land	502-562-3940	502-845-7020
Elie El-Rouaiheb	502-564-3940	502-747-8838
Claude Rhorer, Jr.	502-562-7488	606-263-4092

*A follow-up written report must be sent to the Commission within 7 days of the accident.

Attachment B

Correspondence

Cinergy Corp.
139 East Fourth Street
P.O. Box 960
Cincinnati, OH 45201-0960

CINERGY.

January 18, 1996

Ms. Martha M. Morton, P.E.
Branch Manager
Engineering Division
Commonwealth of Kentucky
Public Service Commission
730 Schenkel Lane
Frankfort, KY 40602

RE: Steven Carpenter, Electrical Fatality
Date of Accident: 1/14/96

Dear Ms. Morton:

As required by 807 KAR 5:006, Section 26, enclosed is the written follow-up report for the above referenced occurrence for our Union Light, Heat & Power Subsidiary.

Per your request, enclosed is the following information:

- Trouble Report/Dispatcher Call Report
- Documentation of last construction upgrade
- Date of last inspection
- Fire Report
- Photos

The Coroner's Report is being requested, and when received, will be forwarded to you.

If you have any questions, please contact me at 513-287-2980.

Donald R. Welch
Senior Safety Engineer

cc: M. Voorhees

Cinergy Corp.
139 East Fourth Street
P.O. Box 960
Cincinnati, OH 45201-0960

CINERGY.

March 19, 1996

Ms. Martha M. Morton, P.E.
Branch Manager
Engineering Division
Commonwealth of Kentucky
Public Service Commission
730 Schenkel Lane
Frankfort, KY 40602

RE: Steven Carpenter, Electrical Fatality
Date of Accident: 1/14/96

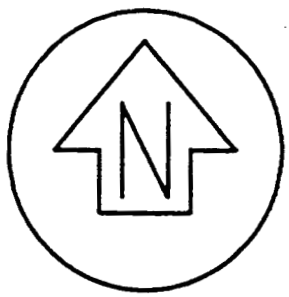
Dear Ms. Morton:

Per Mr. John Land's request, attached is a copy of our survey of the accident scene and our electrical installation for the above incident.

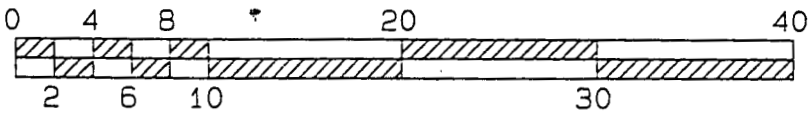
If you have any questions, please contact me at 513-287-2980.

Donald R. Welch
Senior Safety Engineer

NORTH BASED ON MAGNETIC
COMPASS READING



SCALE: 1" = 10'



DATE OF SURVEY: FEB. 13, 1996
TEMP. 25 F (AVG.)

LOCATION OF PHASE BURN DETERMINED BY USING THE CENTER OF THE SLEEVE ATTACHED OVER THE BURN AREA BY THE TROUBLE DEPT.

FOR THIS SURVEY THE LOCATION OF THE BURN MARK ON THE BUILDING WAS APPROXIMATED FROM A PHOTOGRAPH AND DETERMINING HOW MANY BRICKS FROM THE BLDG. CORNER TO THE BURN MARK AND MEASURING THAT NUMBER OF BRICKS AT GROUND LEVEL

CURB & EDGE/WALK STA.0+21.50

EDGE/WALK STA.0+17.53

EDGE/WALK STA.0+07.87

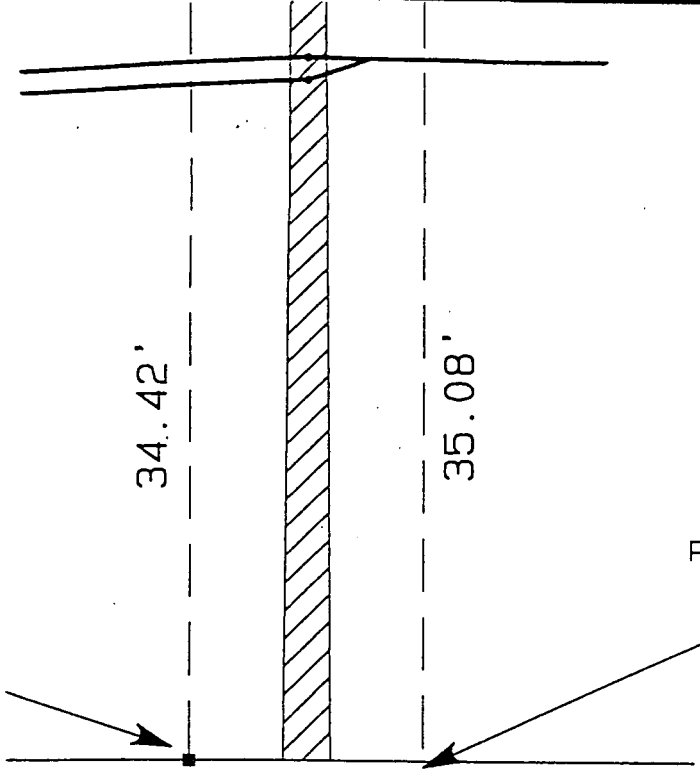
EDGE/WALK STA.0+02.95

PHASE HUB STA.0+00.00

POLE BUTT STA.-0+00.3/3.5'LT.

COMMON NEUT. STA.-0+00.37/6.03'LT.

SHEET 2 OF 3



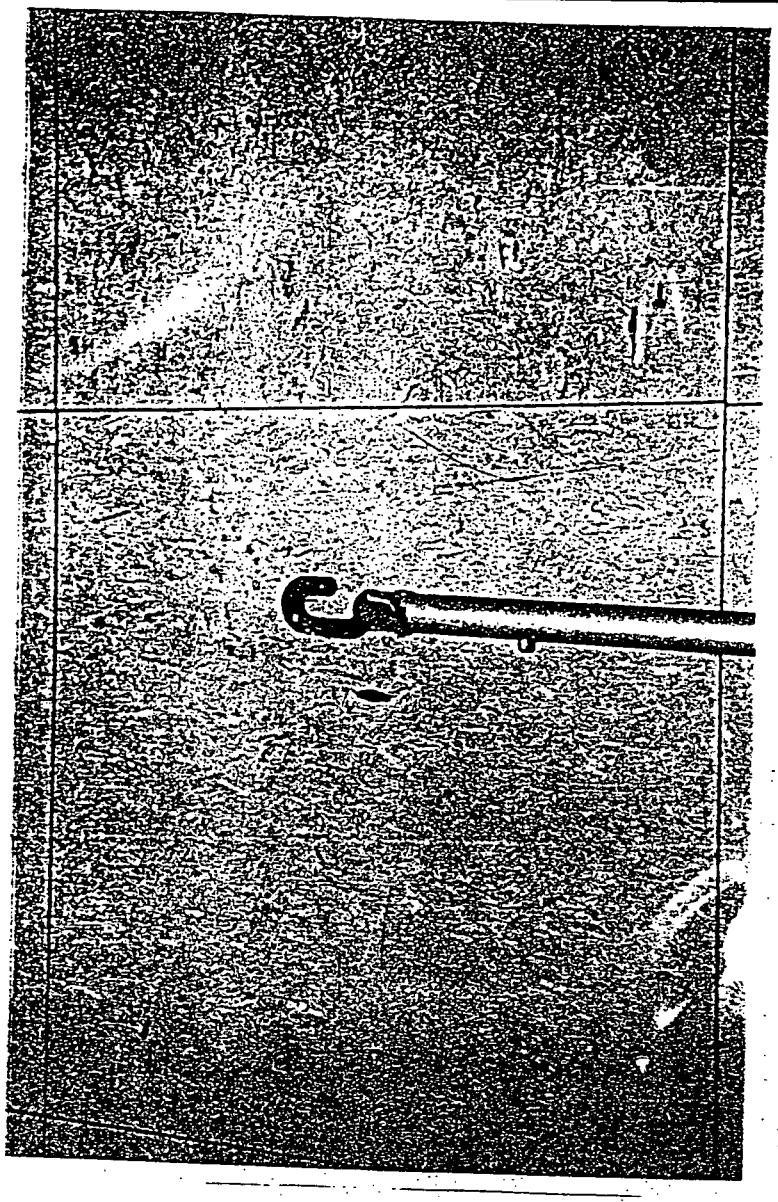
PT. ON CONC. BENEATH NEUT. ATTACHMENT
STA. = -0+00.37, 6.03'LT.
EL. = 102.59

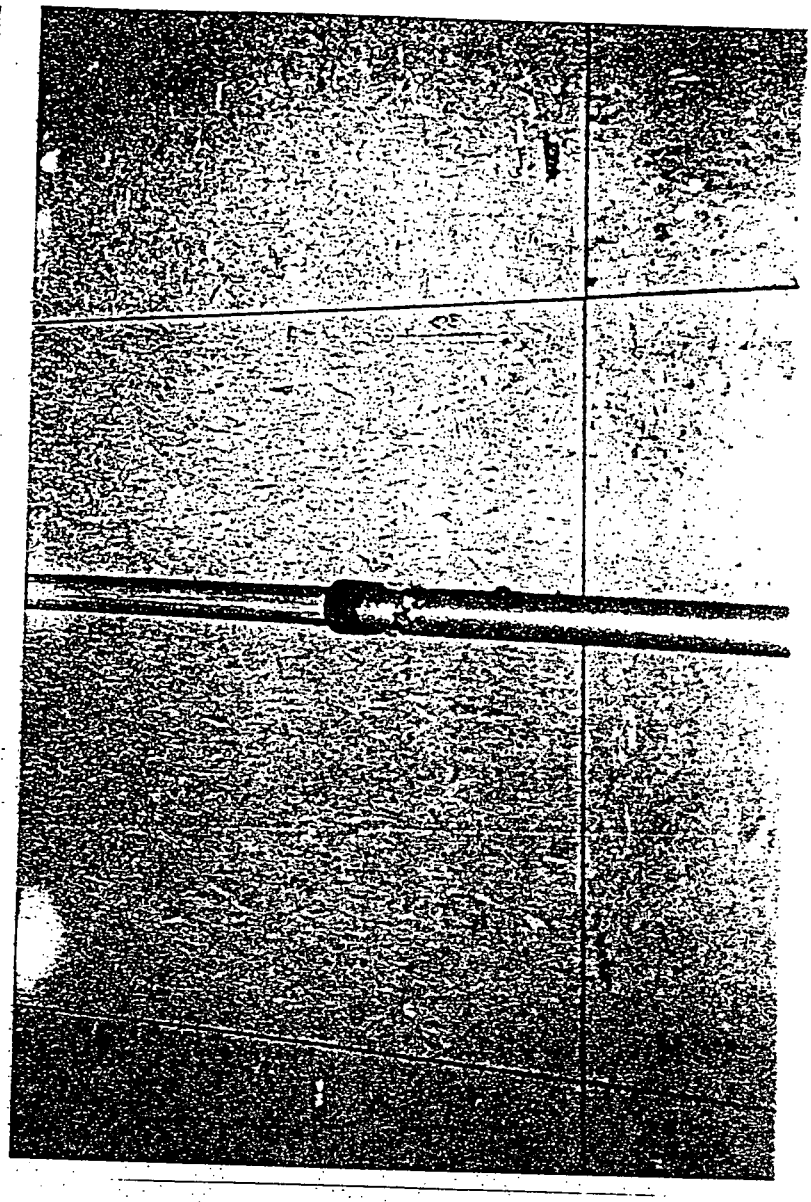
SHEET 3 OF 3

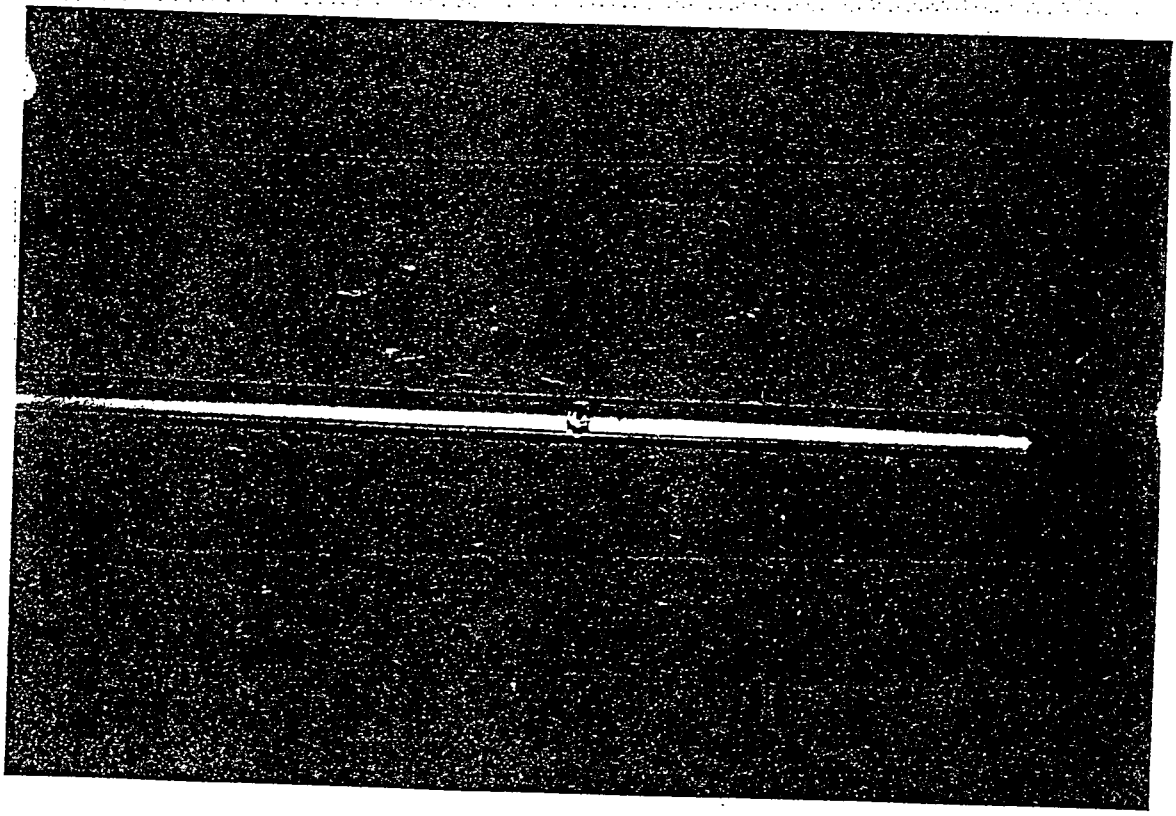
000061	VILLA	4213.2	1	S110494	
000062	VILLA	4313.2	4	S110494	
000063	VILLA	4413.2	1	S110494	
~~000064~~	~~5985~~	~~138~~	~~2~~	~~S110494~~	
~~000065~~	~~5967~~	~~69~~	~~5~~	~~S112994~~	
~~000066~~	~~BU PE 45~~	~~63 345~~	~~1~~	~~S113094~~	
~~000067~~	~~DB BU 45~~	~~19 345~~	~~1~~	~~S113094~~	
~~000068~~	~~5962~~	~~69~~	~~2~~	~~S120294~~	
~~000069~~	~~5966~~	~~69~~	~~1~~	~~S120294~~	
~~000070~~	~~5987~~	~~138~~	~~2~~	~~S120794~~	
~~000071~~	~~5988~~	~~138~~	~~2~~	~~S120794~~	
~~000072~~	~~5983~~	~~138~~	~~1~~	~~S120994~~	
000073	WILDER	4513.2	4	S010595	
000074	WILDER	4413.2	3	S011295	
000075	KENTON	4113.2	4	S011795	Indicates last full feeder inspection was Jan 17, 1995
000076	BELLEVUE	4113.2	2	S012395	
000077	CONSTAN	4313.2	2	S012395	
000078	BELLEVUE	4213.2	5	S012695	
000079	KENTON	4513.2	1	S013195	
000080	KY UNIV	4113.2	2	S020195	
000081	CONSTAN	4413.2	3	S020295	
000082	FLORENCE	4513.2	3	S020995	
000083	VERONA	4113.2	1	S021795	
000084	BUFFTON	4713.2	1	S030195	
000085	MARSHALL	4113.2	2	S030895	
000086	7524	13.2	1	S031495	
000087	WEST END	4813.2	2	S031595	
000088	BUFFTON	4213.2	2	S032495	
000089	BEAVER	4213.2	2	S041495	
000090	AUGTINE	4613.2	4	S050295	
000091	FLORENCE	4413.2	3	S050895	
000092	HANDS	4113.2	4	S053195	
000093	DECORSEY	4113.2	3	S061395	
000094	CLARYVIL	4113.2	1	S072595	
000095	FLORENCE	4613.2	4	S080795	
000096	CONSTAN	4213.2	3	S080895	
000097	FLORENCE	4713.2	2	S080995	
000098	LIMABURG	4313.2	3	S081095	
000099	AUGTINE	4213.2	3	S082595	
000100	LEWISBG	A4	1	S082995	
000101	GRANT	4113.2	4	S090795	
000102	AUGTINE	4113.2	2	S091895	
000103	CLARYVIL	4213.2	5	S100595	
000104	CLARYVIL	4313.2	1	S101295	
000105	DONALDSN	4113.2	3	S101295	
000106	VILLA	4113.2	2	S102095	
000107	DONALDSN	4213.2	1	S110695	
000108	FT MITCH	B4	1	S110895	
000109	FT MITCH	C4	1	S110995	
000110	FT MITCH	D4	1	S110995	
000111	EAST BND	CP13.2	2	S111095	
000112	WMTOWN	A4	1	S111095	
000113	WMTOWN	C4	1	S111095	
000114	LATONIA	A4	1	S112195	
000115	LATONIA	C4	1	S112195	
000116	LATONIA	B4	1	S112795	
000117	WILDER	4813.2	1	S112795	
000118	YORK	A4	1	S120295	

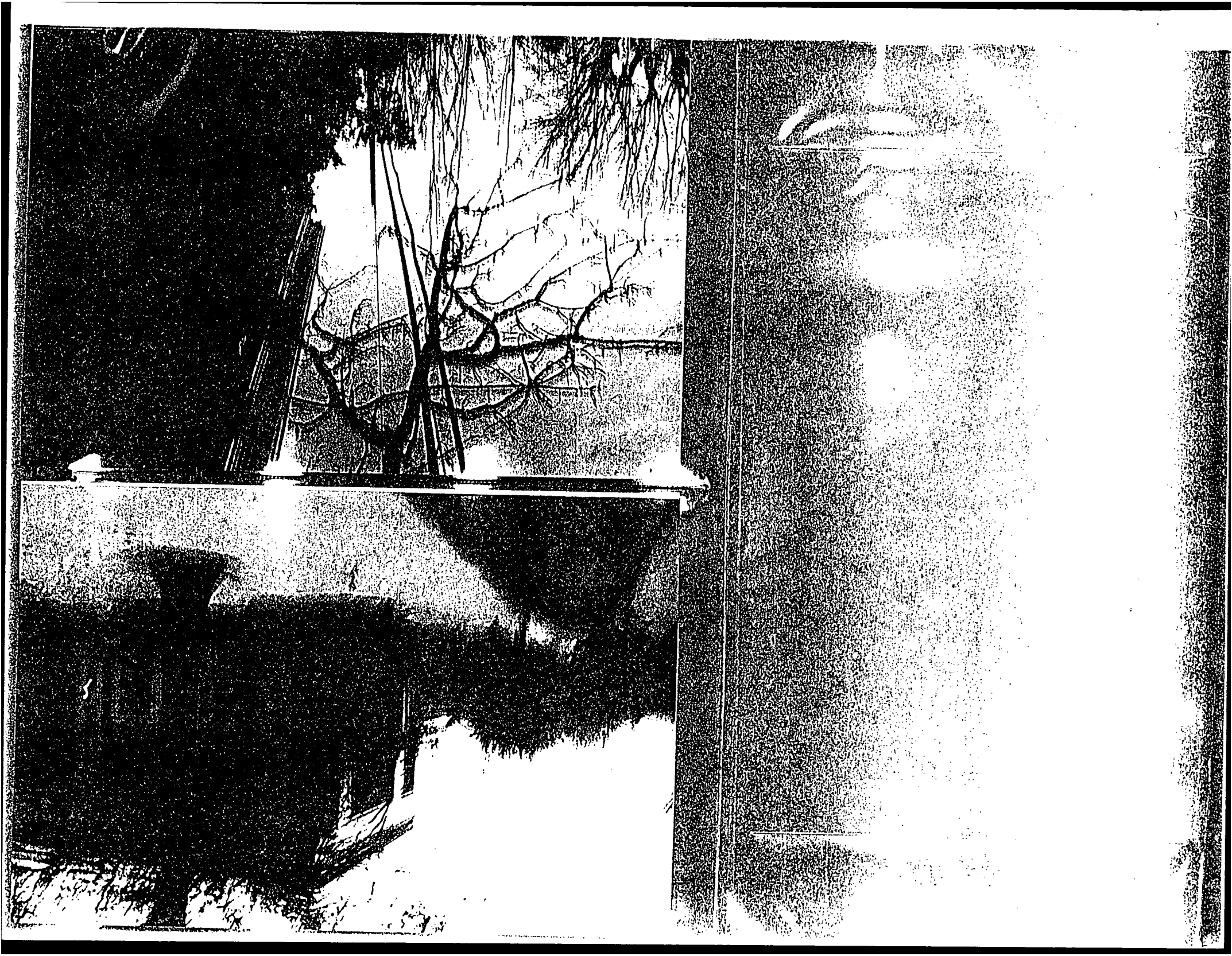
Attachment C

Photographs









Attachment D

Staff Engineering Report

Utility: Union Light, Heat, & Power
Victim: Mr. Stephen W. Carpenter
Report Date: October 4, 1996

Utility Accident
Engineering Report

Introduction

The staff investigators have reported a horizontal clearance of 3.8 feet to Mr. Carpenter's home under windy conditions while the utility has measured a clearance of approximately 5 feet under calm conditions. Neither of these clearances meet the minimum requirements of the 1990 National Electrical Safety Code ("NESC") Rule 234C.1. This rule requires a horizontal clearance of 4.5 feet when displaced by wind and a clearance of 7.5 feet under calm conditions. However, the NESC does not require existing installations which comply with prior editions of the code to be modified to meet new rules. This line was last upgraded in 1973, at which time, the 1961 edition was in effect. Rule 234C.4.(a) of that edition requires a minimum clearance of 3 feet. Considering the close proximity of the line to the house, it is necessary to determine if the line would be blown too close to the house under windy conditions.

Data

Rule 250 of the 1961 NESC contains a general loading map, which recognizes three loading districts in the United States. "Loading" refers to conditions such as ice, wind, and temperature, which places additional stress on the conductor and its supports. The three districts specify loading conditions which can be assumed to occur in different parts of the country. Kentucky is in a Medium Loading District, for which a horizontal wind pressure of 4 pounds per square foot can be assumed. This pressure was used in the analysis. It should be noted that the 1990 code requires that 6 pounds per square foot be assumed.

ULH&P has provided a survey, performed by a Registered Land Surveyor, of the accident site. These measurements were used in the analysis as they reflect the line's position without the effects of wind. Specific measurements used in the analysis are depicted on the diagrams in Appendix 1.

Conductor characteristics are contained in charts produced by various manufacturers. By letter dated July 18, 1996, ULH&P was asked to confirm the accuracy of the charts, as well as to

supply stress/strain and thermal expansion data. This information was received on August 5, 1996, and is included in Appendix 2.

Results

Appendix 3 contains a spread sheet analysis. Beginning on page 2 is a listing of the line's position at one foot increments and at important points, such as the accident location and the building's corners. Column K shows the horizontal clearance to the house when the line is at rest. Column L shows the clearance when the line is displaced by wind exerting a 4 pound per square foot pressure. The analysis shows that at the accident location, the line would be about 3.16 feet from the house under a 4 pound wind, which complies with the three feet minimum. However, beginning about 3 feet from this point, the line would be less than three feet from the house, and gradually reduces to less than 2 feet from the house at the front corner. These calculations only reflect the influence of wind displacement to the position of the cable and are only valid at the temperature, 25 degrees Fahrenheit, when ULH&P's surveyors made the measurements. Under higher temperatures, the line would most likely be closer, due to thermal expansion which would increase the sag. The elongation of the cable from the wind pressure was not considered, as it too, would further reduce the clearance, which has already been shown to be inadequate.

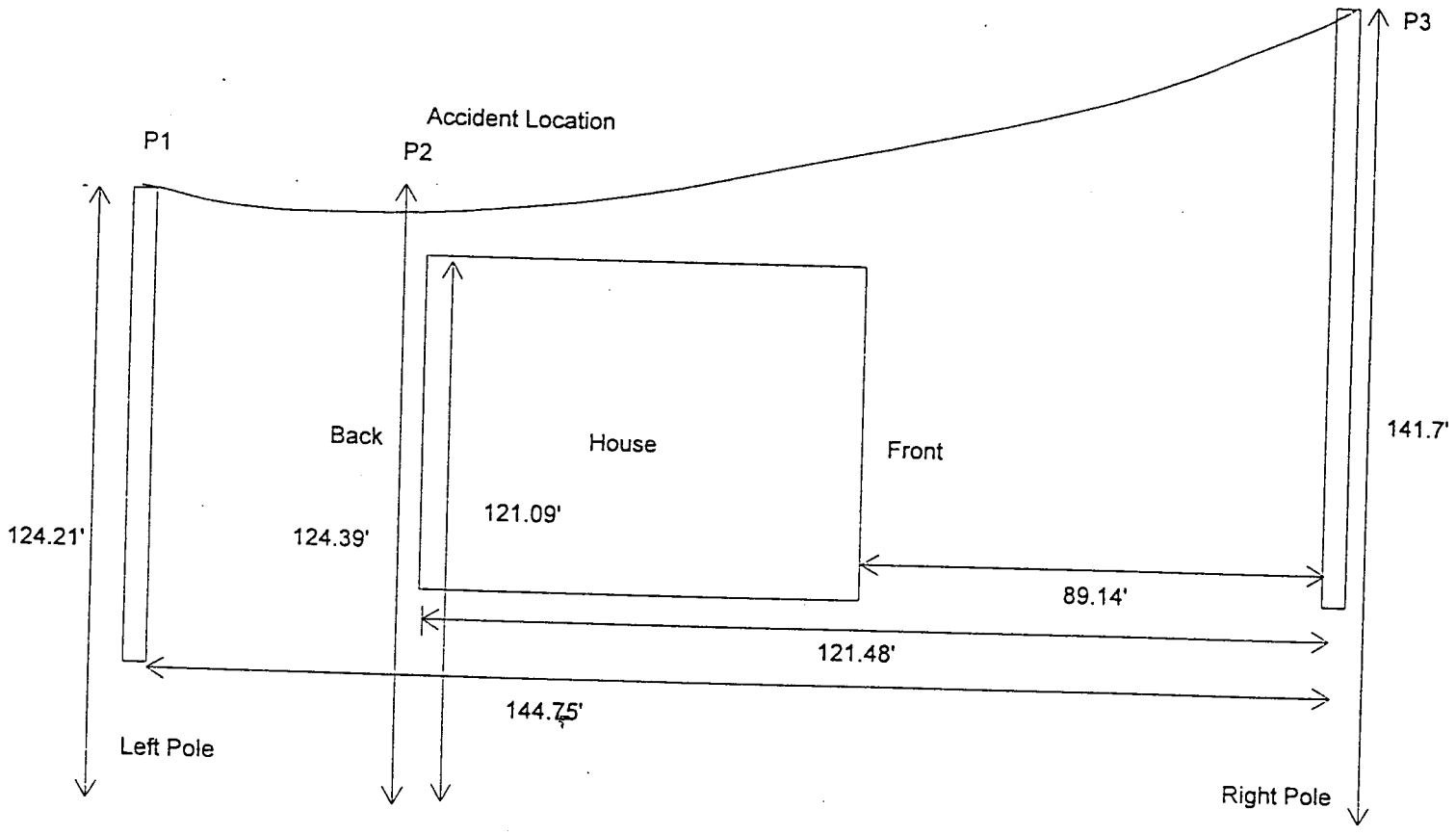
Rule 234C.4.(a) requires that the horizontal clearance govern above the roof level to the point where the diagonal equals the vertical clearance requirement, which is 8 feet. The elevation of the house is 121.09 feet, while the line ranges from 124.4 to 126.3 feet, which places the diagonal between 4.6 and 5.6 feet. Therefore, throughout the entire length of the house, the horizontal clearance would govern.

Conclusions and Recommendations

As the line could be less than three feet from the house when displaced by wind, it does not meet the horizontal clearance requirements of the 1961 NESC. ULH&P is in probable violation of 807 KAR 5:041, Section 3, Acceptable Standards. It is recommended that the line be modified to meet the requirements of the 1990 NESC.

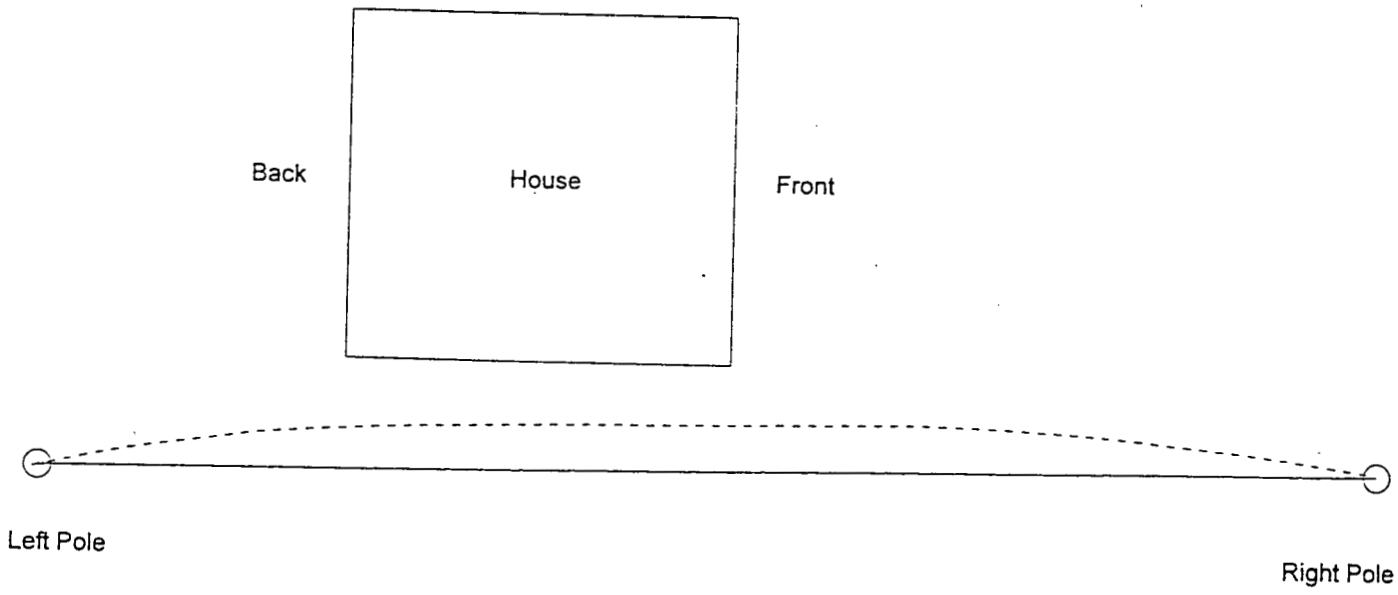
Martha M. Morton, Manager
Electric Branch
Division of Engineering & Services

2364 Brice Avenue
Fort Mitchell, KY
Side View
Viewed from Driveway
Not to Scale



Appendix 1
Staff Engineering Report

2364 Brice Avenue
Fort Mitchell, KY
Top Down View
Not to Scale



COMMONWEALTH OF KENTUCKY
PUBLIC SERVICE COMMISSION
730 SCHENKEL LANE
POST OFFICE BOX 615
FRANKFORT, KY 40602
(502) 564-3940

July 18, 1996

Mr. Donald R. Welch
Senior Safety Engineer
Cinergy Corp.
139 East Fourth Street
P. O. Box 960
Cincinnati, OH 45201-0960

Re: Steven Carpenter, Electrical Contact Fatality
Date of Accident: January 14, 1996

Dear Mr. Welch:

The following information is requested to assist us in completing our investigation report of the above referenced accident:

1. Please confirm that the information for Raven 1/0 6/1 conductors listed in the attached data sheet accurately reflect the characteristics of the primary conductor involved in the accident. If not, provide a listing of the actual characteristics, most importantly diameter and weight.

2. Provide a copy of the stress/strain diagram and linear coefficient of thermal expansion for the primary conductor involved in the accident.

A response by August 1, 1996 would be appreciated so we may finalize this report.

Sincerely,

Martha M. Morton
Manager, Electric Branch
Division of Engineering & Services

cc: Keith S. Black

Appendix 2
Staff Engineering Report

Code Word	Size (AWG or KCM)	Stranding (Al/St)	Diameter (Inches)				Weight Per 1000 Feet (Lbs.)			Content (%)		Rated Strength (Lbs.)	Resistance OHMS/1000 Feet		Ampacity[1] (Amps)
			Individual Wires		Steel Core	Complete Cable	Al	St	Total	Al	St		DC @ 20°C	AC @ 50°C	
			Al	St											
Turkey	6	6/1	.0661	0661	0661	198	24.5	11.6	36.1	67.90	32.10	1,190	.646	.736	105
Swan	4	6/1	.0834	.0834	.0834	.250	39.0	18.4	57.4	67.90	32.10	1,860	.406	.468	135
Swanate	4	7/1	.0772	1029	.1029	.257	39.0	28.0	67.0	58.13	41.87	2,360	.402	.467	135
Sparrow	2	6/1	.1052	.1052	.1052	.316	62.0	29.2	91.3	67.90	32.10	2,850	.256	.300	180
Sparate	2	7/1	.0974	.1299	.1299	325	62.0	44.7	106.7	58.13	41.87	3,460	.253	.301	180
Robin	1	6/1	.1181	.1182	.1182	.355	78.2	37.0	115.2	67.90	32.10	3,550	.203	.241	205
Raven	1/0	6/1	.1327	.1327	.1327	.398	98.6	46.6	145.2	67.90	32.10	4,380	.161	.196	235
Quail	2/0	6/1	.1489	.1489	.1489	447	124.3	58.8	183.1	67.90	32.10	5,310	.127	.159	270
Pigeon	3/0	6/1	.1672	.1672	.1672	.502	156.8	74.1	230.9	67.90	32.10	6,620	.101	.130	310
Penguin	4/0	6/1	.1878	.1878	.1878	563	197.7	93.4	291.1	67.90	32.10	8,350	.0801	.108	350
Waxwing	266.8	18/1	.1217	.1217	.1217	609	250.4	39.3	290	86.45	13.55	6,880	.0645	.0726	440
Partridge	266.8	26/7	.1013	0788	2364	.642	251.7	115.6	367	68.53	31.47	11,300	.0636	.0715	450
Ostrich	300.0	26/7	.1074	.0835	.2505	.680	283.0	129.9	413	68.53	31.47	12,700	.0566	.0636	480
Merlin	336.4	18/1	.1367	.1367	.1367	.684	315.8	49.5	365	86.45	13.55	8,680	.0512	.0577	510
Linnet	336.4	26/7	.1137	.0884	.2652	.720	317.3	145.7	463	68.53	31.47	14,100	.0505	.0568	520
Oriole	336.4	30/7	.1059	.1059	.3177	.741	318.1	209.0	527	60.35	39.65	17,300	.0500	.0562	520
Chickadee	397.5	18/1	.1486	.1486	.1486	.743	372.5	58.5	431	86.45	13.55	9,940	.0433	.0490	560
Brant	397.5	24/7	.1287	.0858	.2574	.772	374.9	137.1	512	73.23	26.77	14,600	.0429	.0484	570
Ibis	397.5	26/7	.1236	.0961	.2883	.783	375.0	172.2	547	68.53	31.47	16,300	.0427	.0481	570
Lark	397.5	30/7	.1151	.1151	.3453	.806	375.9	246.9	623	60.35	39.65	20,300	.0423	.0476	580
Pelican	477.0	18/1	.1628	1628	.1628	.814	447.8	70.2	518	86.45	13.55	11,800	.0361	.0409	630
Flicker	477.0	24/7	.1410	.0940	.2820	.846	450.0	164.5	615	73.23	26.77	17,200	.0357	.0404	640
Hawk	477.0	26/7	.1354	.1053	.3159	.858	450.0	206.8	657	68.53	31.47	19,500	.0356	.0402	640
Hen	477.0	30/7	.1261	.1261	.3783	.883	451.0	296.3	747	60.35	39.65	23,800	.0353	.0398	650
Osprey	556.5	18/1	1758	1758	1758	879	522	82	604	86.45	13.55	13,700	.0309	.0350	690
Parakeet	556.5	24/7	1523	.1015	.3045	914	525	192	717	73.23	26.77	19,800	0306	.0347	700
Dove	556.5	26/7	1463	.1138	.3414	927	525	241	766	68.53	31.47	22,600	.0305	.0346	710
Eagle	556.5	30/7	1362	.1362	4086	953	526	346	872	60.35	39.65	27,800	.0302	.0342	720
Peacock	605.0	24/7	1588	.1059	3177	953	571	208	779	73.23	26.77	21,600	.0282	0320	740
Squab	605.0	26/7	.1525	.1186	3558	966	571	262	833	68.52	31.47	24,300	.0281	.0318	750
Wood Duck	605.0	30/7	.1420	.1420	.4260	.994	572	376	948	60.35	39.55	28,900	.0278	.0343	760
Teal	605.0	30/19	.1420	.0852	4260	.994	572	367	939	60.89	39.11	30,000	.0278	.0315	760
Kingbird	636.0	18/1	.1880	.1880	.1880	.940	597	94	691	86.45	13.55	15,700	.0271	.0310	750
Swift	636.0	36/1	.1329	.1329	.1329	.930	597	47	644	92.80	7.20	13,690	.0272	.0312	750
Rook	636.0	24/7	.1628	.1085	.3255	.978	600	219	819	73.23	26.77	22,000	.0268	.0305	760
Grosbeak	636.0	26/7	.1564	.1216	.3648	.990	600	275	875	68.53	31.47	25,200	.0267	.0303	770
Scoter	636.0	30/7	.1456	.1456	.4368	1.019	601	395	996	60.35	39.55	30,400	.0264	.0300	780
Egret	636.0	30/19	.1456	.0874	.4370	1.019	601	387	988	60.89	39.11	31,500	.0265	.0300	780
Flamingo	666.6	24/7	.1667	.1111	.3333	1.000	629	230	859	73.23	26.77	23,700	.0256	.0256	790
Gannet	666.6	26/7	.1601	.1245	.3735	1.014	628	289	917	68.53	31.47	26,400	.0255	.0290	790
Stilt	715.5	24/7	.1727	.1151	.3453	1.036	675	247	922	73.23	26.77	25,500	.0238	.0272	820
Starling	715.5	26/7	.1659	.1290	.3870	1.051	675	310	985	68.53	31.47	28,400	.0237	.0271	830
Redwing	715.5	30/19	.1544	.0926	.4630	1.081	676	435	1111	60.89	39.11	34,600	.0235	.0267	840
Coot	795.0	36/1	.1486	.1486	.1486	1.040	747	58	805	92.80	7.20	16,710	.0217	.0253	850
Cuckoo	795.0	24/7	.1820	.1213	.3639	1.092	749	274	1024	73.23	26.77	27,900	.0214	.0246	880
Drake	795.0	26/7	.1749	.1360	.4080	1.108	750	344	1094	68.53	31.47	31,500	.0213	.0245	880
Tern	795.0	45/7	.1329	.0886	.2658	1.063	750	146	896	83.69	16.31	22,100	.0216	.0250	860
Condor	795.0	54/7	.1213	.1213	.3639	1.092	750	274	1023	73.25	26.75	28,200	.0214	.0246	880
Mallard	795.0	30/19	.1628	.0977	.4885	1.140	752	483	1235	60.89	39.11	38,400	.0212	.0242	900
Ruddy	900.0	45/7	1414	0943	.2829	1.131	849	166	1015	83.69	16.31	24,400	.0191	.0222	930
Canary	900.0	54/7	.1291	1291	.3873	1.162	849	310	1159	73.25	26.75	31,900	0189	.0219	950
Hail	954.0	45/7	.1456	0971	2913	1.165	900	175	1075	83.69	16.31	25,900	0180	.0211	970
Cardinal	954.0	54/7	1329	1329	3987	1.196	900	329	1229	73.25	26.75	33,800	.0179	.0207	980
Orioian	1033.5	45/7	1515	1010	3030	1.212	975	190	1165	83.69	16.31	27,700	0166	.0196	1020
Curlew	1033.5	54/7	.1383	1383	4149	1.246	975	256	1331	73.25	26.75	36,600	.0165	.0192	1030

Cinergy Corp.
139 East Fourth Street
P.O. Box 960
Cincinnati, OH 45201-0960

CINERGY.

July 30, 1996

Ms. Martha M. Morton, P.E.
Branch Manager
Engineering Division
Commonwealth of Kentucky
Public Service Commission
730 Schenkel Lane
Frankfort, KY 40602

RE: Steven Carpenter, Electrical Contact Fatality
Date of Accident: 1/14/96

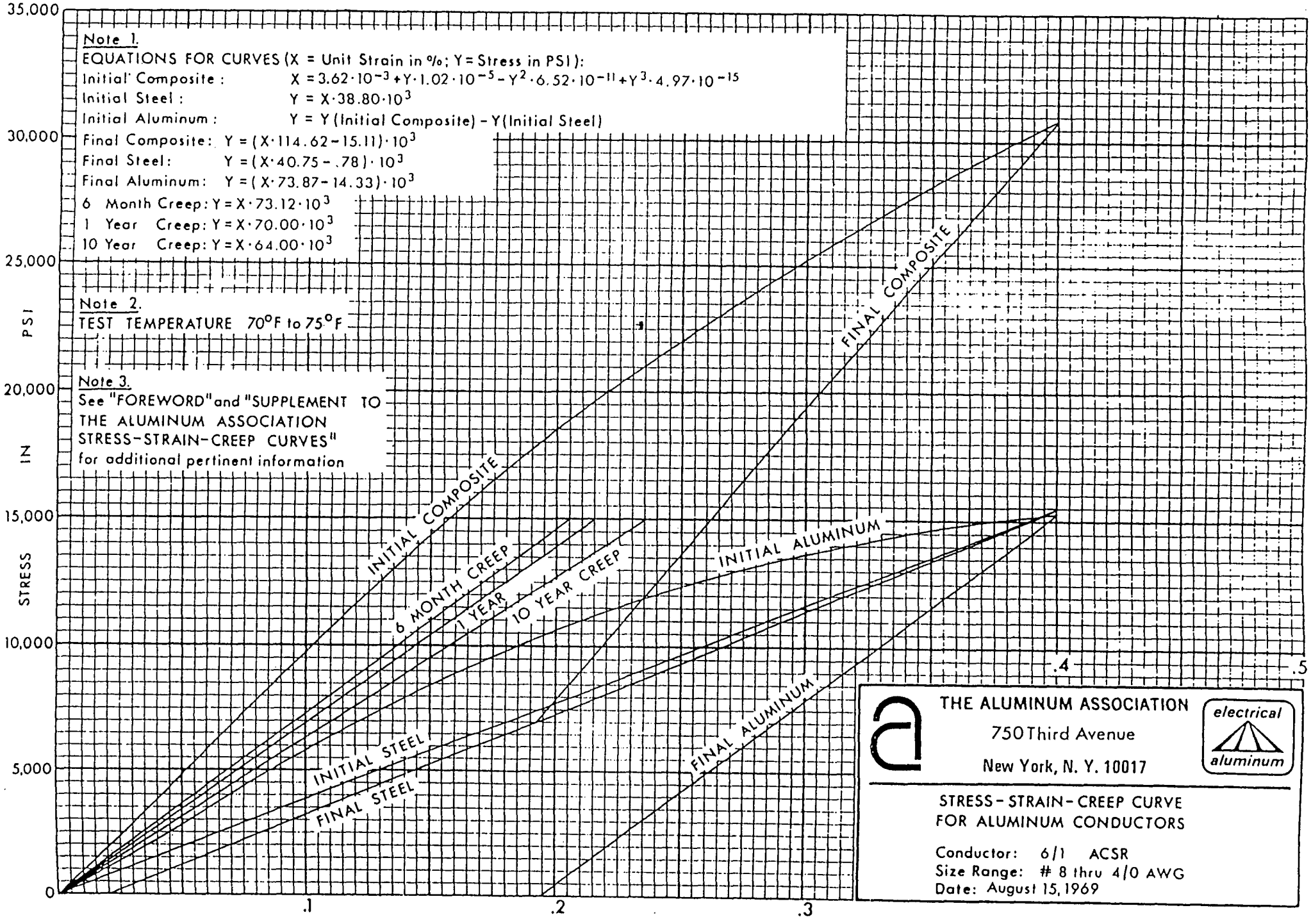
In response to your letter dated July 18, 1996, the primary conductor was Raven I/O ACSR 6/1, and the information you have accurately reflects its characteristics.

Also, attached is a copy of the stress-strain curves for this conductor and a copy of the table that contains the temperature coefficient of expansion.

Sincerely,

Donald R. Welch

Donald R. Welch
Senior Safety Engineer


Note 1.
EQUATIONS FOR CURVES (X = Unit Strain in %; Y = Stress in PSI):
Initial Composite: $X = 3.62 \cdot 10^{-3} + Y \cdot 1.02 \cdot 10^{-5} - Y^2 \cdot 6.52 \cdot 10^{-11} + Y^3 \cdot 4.97 \cdot 10^{-15}$
Initial Steel: $Y = X \cdot 38.80 \cdot 10^3$
Initial Aluminum: Y = Y (Initial Composite) - Y (Initial Steel)
Final Composite: $Y = (X \cdot 114.62 - 15.11) \cdot 10^3$
Final Steel: $Y = (X \cdot 40.75 - .78) \cdot 10^3$
Final Aluminum: $Y = (X \cdot 73.87 - 14.33) \cdot 10^3$
6 Month Creep: $Y = X \cdot 73.12 \cdot 10^3$
1 Year Creep: $Y = X \cdot 70.00 \cdot 10^3$
10 Year Creep: $Y = X \cdot 64.00 \cdot 10^3$
Note 2.
TEST TEMPERATURE 70°F to 75°F
Note 3.
See "FOREWORD" and "SUPPLEMENT TO THE ALUMINUM ASSOCIATION STRESS-STRAIN-CREEP CURVES" for additional pertinent information
STRESS IN PSI
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
.1
.2
.3
.4
.5
UNIT STRAIN IN PERCENT
FINAL COMPOSITE
INITIAL COMPOSITE
6 MONTH CREEP
1 YEAR
10 YEAR CREEP
INITIAL ALUMINUM
FINAL ALUMINUM
INITIAL STEEL
FINAL STEEL
THE ALUMINUM ASSOCIATION
750 Third Avenue
New York, N. Y. 10017
electrical aluminum
STRESS-STRAIN-CREEP CURVE
FOR ALUMINUM CONDUCTORS
Conductor: 6/1 ACSR
Size Range: # 8 thru 4/0 AWG
Date: August 15, 1969

supplement

To supplement The Aluminum Association Stress-Strain-Creep Curves, the following values for temperature coefficients of expansion may be used for normal sag-tension computations. For ACSR conductors, the temperature coefficients of expansion listed apply only so long as the stress is borne by both the steel and aluminum strands.

Conductor	Strand-ing	Temperature Coefficient of Expansion			
		Initial/°F	Final/°F	Initial/°C	Final/°C
EC Aluminum	All	$12.8 \cdot 10^{-6}$	$12.8 \cdot 10^{-6}$	$23.0 \cdot 10^{-6}$	$23.0 \cdot 10^{-6}$
Steel	All	$6.4 \cdot 10^{-6}$	$6.4 \cdot 10^{-6}$	$11.5 \cdot 10^{-6}$	$11.5 \cdot 10^{-6}$
ACSR	6/1	$10.2 \cdot 10^{-6}$	$10.5 \cdot 10^{-6}$	$18.3 \cdot 10^{-6}$	$18.9 \cdot 10^{-6}$
ACSR	7/1	$9.5 \cdot 10^{-6}$	$9.8 \cdot 10^{-6}$	$17.1 \cdot 10^{-6}$	$17.7 \cdot 10^{-6}$
ACSR	18/1	$11.6 \cdot 10^{-6}$	$11.7 \cdot 10^{-6}$	$20.8 \cdot 10^{-6}$	$21.1 \cdot 10^{-6}$
ACSR	24/7	$10.5 \cdot 10^{-6}$	$10.8 \cdot 10^{-6}$	$18.9 \cdot 10^{-6}$	$19.5 \cdot 10^{-6}$
ACSR	26/7	$9.9 \cdot 10^{-6}$	$10.5 \cdot 10^{-6}$	$17.8 \cdot 10^{-6}$	$18.9 \cdot 10^{-6}$
ACSR	30/7	$9.5 \cdot 10^{-6}$	$9.9 \cdot 10^{-6}$	$17.0 \cdot 10^{-6}$	$17.8 \cdot 10^{-6}$
ACSR	45/7	$11.2 \cdot 10^{-6}$	$11.5 \cdot 10^{-6}$	$20.2 \cdot 10^{-6}$	$20.7 \cdot 10^{-6}$
ACSR	54/7	$10.2 \cdot 10^{-6}$	$10.7 \cdot 10^{-6}$	$18.3 \cdot 10^{-6}$	$19.3 \cdot 10^{-6}$
ACSR	54/19	$10.4 \cdot 10^{-6}$	$10.8 \cdot 10^{-6}$	$18.8 \cdot 10^{-6}$	$19.5 \cdot 10^{-6}$
ACSR	84/19[a]	$11.2 \cdot 10^{-6}$	$11.5 \cdot 10^{-6}$	$20.1 \cdot 10^{-6}$	$20.6 \cdot 10^{-6}$

stress-strain-creep curves for Aluminum Electrical Conductors

foreword

In 1961, the Technical Committee on Electrical Conductor of The Aluminum Association initiated a study of the Stress-Strain Curves for bare stranded aluminum conductor and ACSR (Aluminum Conductor, Steel Reinforced) in use by members of the Association manufacturing these products. The purpose of the study was to determine what, if any, differences existed between curves for the same types of conductors.

Results of this study revealed that the curves in use by the various companies differed to only a minor degree. In fact, the differences in most instances were no greater than the experimental error that might occur during the tests upon which the curves are based. It was thus found possible to adopt Typical Stress-Strain Curves for the various standard types of conductors now being produced for computing sags and tensions to be used in installing these conductors.

In 1964, it was decided that this study should be extended to incorporate data on Creep—the permanent elongation of the conductors that can be expected with time under sustained stress after the conductors have been placed in service. Again, the study showed that the effect of creep data used by various conductor manufacturers for standard conductors differed by only a minor degree. It was thus found that average creep data could be used.

These curves are proposed and presented for sag-tension calculations only. Stress-Strain Curves are not a useful parameter for product acceptance.

The study has been completed for the following types of bare stranded conductors:

ACSR (Al / Steel strands)

6/1	30/7
7/1	45/7
18/1	54/7
24/7	54/19
26/7	84/19

EC Aluminum (Strands)

7	37
19	61

Typical Stress-Strain-Creep Curves for these conductors have been adopted by the Association's Technical Committee on Electrical Conductor, and copies of these Curves are attached. Study of data for other types of conductors is continuing.

August 15, 1969

Note for Bundled Conductors

When overhead conductors are bundled, close matching of Sags and Tensions requires that the bundle subconductors be manufactured identically and that they be handled identically during installation.

	A	B	C
1	Line and Building Coordinates		
2			
3			
4	Line Equation	y = c cosh(x/c)	
5			
6	c	542.24	feet
7	x1	-7.208	feet
8	x2	16.062	feet
9	x3	137.54	feet
10	y1	542.29	feet
11	y2	542.48	feet
12	y3	559.78	feet
13	ym1	124.21	feet
14	ym2	124.39	feet
15	ym3	141.7	feet
16	offset to ground	418.08	feet
17			
18			
19	Axes Rotation		
20	α	= angle of rotation	
21	α	= arctan[(y2-y1)/span length]	
22	α	0.1202	radians
23	xt = y sin(angle of rotation) + x cos(angle of rotation)		
24	yt = y cos(angle of rotation) - x sin(angle of rotation)		
25			
26			
27	Building Coordinates		
28		89.14	Distance to x3
29		121.48	Distance to x3
30		121.09	Building Elevation
31		x (feet)	y (feet)
32	Front Corner	48.40	544.40
33	Back Corner	16.06	542.48
34			
35	Building Coord. Slope	= (yBackCorner-yFrontCorner)/(zBackCorner-zFrontCorner)	
36	Building Coord. Slope	359.33	
37			
38	Conductor	1/0, 6 strand	
39	Conductor Weight	0.1452	lbs./foot
40	Conductor Diameter	0.398	inch
41	Wind Pressure	4	lbs./square foot
42	Wind Pressure	0.1327	lbs./foot
43	Swing Angle	= arctan(Wind Pressure/Conductor Weight)	
44	Swing Angle	0.7403	radians

Location	x	y	ym	xt	yt	Sag	1/0 ACSR 4 lb. wind z-displacement	House Distance Line at rest	House Distance wind	Meets Code? Code = 3	Diagonal
Left Pole	-7.208	542.2862	124.2100	57.8948	539.2351	0.0000	0.0000				
	-7	542.2835	124.2039	58.1010	539.2074	0.0277	0.0187				
	-6	542.2715	124.1920	59.0923	539.0756	0.1595	0.1076				
	-5	542.2614	124.1818	60.0839	538.9455	0.2895	0.1953				
	-4	542.2531	124.1735	61.0757	538.8173	0.4177	0.2818				
	-3	542.2466	124.1671	62.0677	538.6910	0.5441	0.3670				
	-2	542.2420	124.1624	63.0599	538.5665	0.6686	0.4510				
	-1	542.2392	124.1597	64.0524	538.4437	0.7913	0.5338				
Low Point	0	542.2383	124.1588	65.0450	538.3229	0.9122	0.6153				
	1	542.2392	124.1597	66.0379	538.2038	1.0313	0.6956				
	2	542.2420	124.1624	67.0310	538.0866	1.1485	0.7747				
	3	542.2466	124.1671	68.0244	537.9712	1.2638	0.8525				
	4	542.2531	124.1735	69.0179	537.8577	1.3774	0.9291				
	5	542.2614	124.1818	70.0117	537.7460	1.4891	1.0044				
	6	542.2715	124.1920	71.0057	537.6361	1.5990	1.0786				
	7	542.2835	124.2039	71.9999	537.5280	1.7070	1.1514				
	8	542.2973	124.2178	72.9943	537.4218	1.8133	1.2231				
	9	542.3130	124.2334	73.9890	537.3174	1.9177	1.2935				
	10	542.3305	124.2510	74.9839	537.2149	2.0202	1.3627				
	11	542.3499	124.2703	75.9790	537.1141	2.1210	1.4306				
	12	542.3711	124.2915	76.9743	537.0152	2.2199	1.4974				
	13	542.3941	124.3146	77.9698	536.9182	2.3169	1.5628				
	14	542.4190	124.3395	78.9656	536.8229	2.4122	1.6271				
	15	542.4458	124.3662	79.9616	536.7295	2.5056	1.6901				
Accident Location	16	542.4744	124.3948	80.9578	536.6379	2.5971	1.7518				
	16.062	542.4762	124.3967	81.0196	536.6323	2.6028	1.7556	4.9200	3.1644	Yes	4.5768
	17	542.5048	124.4253	81.9542	536.5482	2.6869	1.8124	4.9226	3.1102	Yes	4.5604
	18	542.5371	124.4575	82.9509	536.4603	2.7748	1.8717	4.9254	3.0537	Yes	4.5459
	19	542.5712	124.4917	83.9478	536.3742	2.8609	1.9297	4.9282	2.9984	No	4.5345
	20	542.6072	124.5276	84.9449	536.2900	2.9451	1.9866	4.9310	2.9444	No	4.5262
	21	542.6450	124.5655	85.9422	536.2076	3.0275	2.0422	4.9337	2.8916	No	4.5211
	22	542.6847	124.6054	86.9397	536.1270	3.1081	2.0965	4.9365	2.8400	No	4.5190
	23	542.7262	124.6466	87.9375	536.0482	3.1869	2.1496	4.9393	2.7897	No	4.5202
	24	542.7695	124.6900	88.9354	535.9713	3.2638	2.2015	4.9421	2.7406	No	4.5244
	25	542.8147	124.7352	89.9336	535.8962	3.3389	2.2522	4.9449	2.6927	No	4.5319
	26	542.8618	124.7822	90.9321	535.8230	3.4121	2.3016	4.9477	2.6461	No	4.5425
	27	542.9107	124.8311	91.9307	535.7515	3.4835	2.3497	4.9504	2.6007	No	4.5563
	28	542.9614	124.8818	92.9296	535.6820	3.5531	2.3967	4.9532	2.5565	No	4.5732
	29	543.0140	124.9344	93.9287	535.6142	3.6209	2.4424	4.9560	2.5136	No	4.5933
	30	543.0684	124.9889	94.9280	535.5483	3.6868	2.4868	4.9588	2.4719	No	4.6165
	31	543.1247	125.0451	95.9275	535.4842	3.7509	2.5301	4.9616	2.4315	No	4.6428
	32	543.1828	125.1033	96.9273	535.4220	3.8131	2.5721	4.9644	2.3923	No	4.6722
	33	543.2428	125.1632	97.9272	535.3615	3.8735	2.6128	4.9671	2.3543	No	4.7047
	34	543.3046	125.2251	98.9274	535.3030	3.9321	2.6523	4.9699	2.3176	No	4.7402
	35	543.3683	125.2887	99.9278	535.2462	3.9889	2.6906	4.9727	2.2821	No	4.7788
	36	543.4338	125.3542	100.9285	535.1913	4.0438	2.7276	4.9755	2.2478	No	4.8204
	37	543.5011	125.4216	101.9293	535.1382	4.0969	2.7634	4.9783	2.2148	No	4.8650
	38	543.5704	125.4908	102.9304	535.0870	4.1481	2.7980	4.9811	2.1830	No	4.9125
	39	543.6414	125.5619	103.9317	535.0376	4.1975	2.8313	4.9838	2.1525	No	4.9630
	40	543.7143	125.6348	104.9333	534.9900	4.2451	2.8634	4.9866	2.1232	No	5.0163
	41	543.7891	125.7096	105.9350	534.9443	4.2908	2.8943	4.9894	2.0951	No	5.0725
	42	543.8657	125.7862	106.9370	534.9004	4.3347	2.9239	4.9922	2.0683	No	5.1314
	43	543.9442	125.8646	107.9392	534.8583	4.3768	2.9523	4.9950	2.0427	No	5.1932
	44	544.0245	125.9449	108.9416	534.8181	4.4170	2.9794	4.9977	2.0184	No	5.2578
	45	544.1066	126.0271	109.9442	534.7797	4.4554	3.0053	5.0005	1.9952	No	5.3250
	46	544.1906	126.1111	110.9471	534.7431	4.4920	3.0299	5.0033	1.9734	No	5.3950
	47	544.2765	126.1970	111.9501	534.7084	4.5267	3.0534	5.0061	1.9527	No	5.4676
	48	544.3642	126.2847	112.9534	534.6755	4.5596	3.0755	5.0089	1.9333	No	5.5428
Front Corner	48.402	544.4000	126.3205	113.3568	534.6628	4.5723	3.0841	5.0100	1.9259	No	5.5738
	49	544.4538	126.3742	113.9570	534.6445	4.5906	3.0965				
	50	544.5452	126.4657	114.9607	534.6153	4.6198	3.1162				
	51	544.6385	126.5589	115.9647	534.5879	4.6472	3.1346				
	52	544.7336	126.6540	116.9689	534.5624	4.6727	3.1519				
	53	544.8306	126.7510	117.9733	534.5387	4.6964	3.1678				
	54	544.9294	126.8498	118.9779	534.5169	4.7182	3.1826				
	55	545.0301	126.9505	119.9828	534.4969	4.7382	3.1961				
	56	545.1326	127.0530	120.9878	534.4787	4.7564	3.2083				

A	A	B	C	E	F	G	I	J	K	L	M	N
117		57	545.2370	127.1574	121.9931	534.4624	4.7727	3.2193				
118		58	545.3432	127.2637	122.9987	534.4479	4.7872	3.2291				
119		59	545.4513	127.3718	124.0044	534.4353	4.7998	3.2376				
120		60	545.5613	127.4817	125.0104	534.4245	4.8106	3.2449				
121		61	545.6731	127.5935	126.0166	534.4155	4.8196	3.2509				
122		62	545.7867	127.7072	127.0230	534.4084	4.8267	3.2557				
123		63	545.9022	127.8227	128.0296	534.4031	4.8320	3.2593				
124		64	546.0196	127.9401	129.0365	534.3997	4.8354	3.2616				
125		65	546.1389	128.0593	130.0436	534.3981	4.8370	3.2627				
126		66	546.2599	128.1804	131.0509	534.3984	4.8367	3.2625				
127		67	546.3829	128.3034	132.0584	534.4005	4.8346	3.2611				
128		68	546.5077	128.4282	133.0662	534.4044	4.8307	3.2584				
129		69	546.6344	128.5548	134.0741	534.4102	4.8249	3.2545				
130		70	546.7629	128.6833	135.0823	534.4178	4.8173	3.2494				
131		71	546.8933	128.8137	136.0907	534.4273	4.8078	3.2430				
132		72	547.0255	128.9460	137.0994	534.4387	4.7964	3.2353				
133		73	547.1596	129.0801	138.1082	534.4518	4.7833	3.2264				
134		74	547.2956	129.2160	139.1173	534.4669	4.7682	3.2163				
135		75	547.4334	129.3539	140.1266	534.4837	4.7514	3.2049				
136		76	547.5731	129.4936	141.1362	534.5025	4.7326	3.1923				
137		77	547.7146	129.6351	142.1459	534.5230	4.7121	3.1784				
138		78	547.8581	129.7785	143.1559	534.5454	4.6896	3.1633				
139		79	548.0033	129.9238	144.1661	534.5697	4.6654	3.1469				
140		80	548.1505	130.0709	145.1766	534.5958	4.6392	3.1293				
141		81	548.2995	130.2199	146.1872	534.6238	4.6113	3.1104				
142		82	548.4504	130.3708	147.1981	534.6536	4.5815	3.0903				
143		83	548.6031	130.5235	148.2092	534.6853	4.5498	3.0689				
144		84	548.7577	130.6781	149.2205	534.7188	4.5162	3.0463				
145		85	548.9142	130.8346	150.2321	534.7542	4.4809	3.0225				
146		86	549.0725	130.9929	151.2438	534.7915	4.4436	2.9973				
147		87	549.2327	131.1531	152.2558	534.8305	4.4045	2.9710				
148		88	549.3948	131.3152	153.2681	534.8715	4.3636	2.9434				
149		89	549.5587	131.4792	154.2805	534.9143	4.3208	2.9145				
150		90	549.7245	131.6450	155.2932	534.9589	4.2762	2.8844				
151		91	549.8922	131.8126	156.3061	535.0054	4.2296	2.8530				
152		92	550.0617	131.9822	157.3192	535.0538	4.1813	2.8204				
153		93	550.2331	132.1536	158.3325	535.1040	4.1311	2.7865				
154		94	550.4064	132.3269	159.3461	535.1561	4.0790	2.7514				
155		95	550.5816	132.5021	160.3599	535.2101	4.0250	2.7150				
156		96	550.7586	132.6791	161.3739	535.2659	3.9692	2.6774				
157		97	550.9375	132.8580	162.3881	535.3235	3.9116	2.6385				
158		98	551.1183	133.0388	163.4026	535.3830	3.8521	2.5983				
159		99	551.3010	133.2214	164.4173	535.4444	3.7907	2.5569				
160		100	551.4855	133.4060	165.4322	535.5077	3.7274	2.5143				
161		101	551.6719	133.5924	166.4473	535.5728	3.6623	2.4703				
162		102	551.8602	133.7806	167.4627	535.6397	3.5954	2.4252				
163		103	552.0503	133.9708	168.4783	535.7086	3.5265	2.3787				
164		104	552.2424	134.1628	169.4941	535.7792	3.4558	2.3311				
165		105	552.4363	134.3568	170.5102	535.8518	3.3833	2.2821				
166		106	552.6321	134.5526	171.5264	535.9262	3.3089	2.2319				
167		107	552.8298	134.7502	172.5429	536.0025	3.2326	2.1805				
168		108	553.0293	134.9498	173.5596	536.0807	3.1544	2.1277				
169		109	553.2308	135.1512	174.5766	536.1607	3.0744	2.0738				
170		110	553.4341	135.3545	175.5937	536.2426	2.9925	2.0185				
171		111	553.6393	135.5597	176.6111	536.3263	2.9087	1.9620				
172		112	553.8464	135.7668	177.6288	536.4120	2.8231	1.9043				
173		113	554.0553	135.9758	178.6466	536.4995	2.7356	1.8452				
174		114	554.2662	136.1866	179.6647	536.5888	2.6462	1.7850				
175		115	554.4789	136.3994	180.6830	536.6801	2.5550	1.7234				
176		116	554.6935	136.6140	181.7015	536.7732	2.4619	1.6606				
177		117	554.9100	136.8305	182.7202	536.8682	2.3669	1.5965				
178		118	555.1284	137.0489	183.7392	536.9651	2.2700	1.5312				
179		119	555.3487	137.2692	184.7584	537.0638	2.1713	1.4646				
180		120	555.5709	137.4913	185.7779	537.1644	2.0707	1.3967				
181		121	555.7949	137.7154	186.7975	537.2669	1.9682	1.3276				
182		122	556.0209	137.9413	187.8174	537.3712	1.8638	1.2572				
183		123	556.2487	138.1692	188.8375	537.4775	1.7576	1.1855				
184		124	556.4785	138.3989	189.8578	537.5856	1.6495	1.1126				
185		125	556.7101	138.6305	190.8784	537.6956	1.5395	1.0384				
186		126	556.9436	138.8641	191.8992	537.8075	1.4276	0.9630				
187		127	557.1790	139.0995	192.9202	537.9212	1.3138	0.8862				

A	A	B	C	E	F	G	I	J	K	L	M	N
188		128	557.4163	139.3368	193.9415	538.0369	1.1982	0.8082				
189		129	557.6555	139.5760	194.9629	538.1544	1.0807	0.7290				
190		130	557.8966	139.8171	195.9846	538.2738	0.9613	0.6484				
191		131	558.1396	140.0601	197.0066	538.3951	0.8400	0.5666				
192		132	558.3845	140.3050	198.0287	538.5183	0.7168	0.4835				
193		133	558.6313	140.5518	199.0511	538.6433	0.5918	0.3992				
194		134	558.8800	140.8005	200.0737	538.7703	0.4648	0.3135				
195		135	559.1306	141.0511	201.0966	538.8991	0.3360	0.2266				
196		136	559.3831	141.3036	202.1196	539.0298	0.2053	0.1385				
197		137	559.6375	141.5580	203.1429	539.1624	0.0727	0.0490				
198	Right Pole	137.54	559.7754	141.6959	203.6946	539.2347	0.0004	0.0003				
199												
200	Locations are viewed from driveway											

Attachment E

Accident Notification Listing and ULH&P's Acknowledgement

ULH&P The Energy Service Company

The Union Light, Heat and Power Company
107 Brent Spence Square • Covington, Kentucky 41012-0032

Via UPS Overnight

August 30, 1995

Claude G. Rhorer, Jr., Director
Division of Engineering and Services
Kentucky Public Service Commission
P.O. Box 615
Frankfort, Kentucky 40602

Re: Requirement to Report Accidents

Dear Mr. Rhorer:

This is to acknowledge, on behalf of The Union Light, Heat and Power Company, receipt of your letter to all jurisdictional electric utilities dated August 8, 1995 regarding the requirements of 807 KAR 5:006, Section 26. As your letter directs, we will disseminate the information contained therein to the appropriate personnel within our organization.

To facilitate the dissemination of such information in the future, please send a copy directly to :

James B. Gainer, Esq.
Cinergy Corp.
Legal Department
139 E. Fourth Street
Cincinnati, Ohio 45202

Very truly yours,

G. James Van Heyde

G. James Van Heyde
Senior Counsel

GJVH:bb

COMMONWEALTH OF KENTUCKY
PUBLIC SERVICE COMMISSION
730 SCHENKEL LANE
POST OFFICE BOX 615
FRANKFORT, KY. 40602
(502) 564-3940

August 8, 1995

TO ALL JURISDICTIONAL ELECTRIC UTILITIES

The Commission's Regulation 807 KAR 5:006, Section 26, requires each utility to notify the Commission of any utility related accident which results in serious injury or under other specified circumstances. Notice of reportable accidents must be provided to the Commission within two hours of discovery by the utility. A summary written report on all reportable accidents shall be submitted to and received by the Commission within seven calendar days of the date of the accident. A copy of the subject regulation is attached for your convenience.

The following list of names and telephone numbers replaces an earlier listing of Commission Personnel and telephone numbers.

PSC Primary Contact	Business Number	Residence
Martha Morton	(502) 564-3940 Ext. 421	(606) 299-0568
Bob Ueltschi	(502) 564-3940 Ext. 424	(606) 269-8374
John Land	(502) 564-3940 Ext. 423	(502) 845-7020
Elie El-Rouaiheb	(502) 564-3940 Ext. 422	(502) 747-8838

In the event the primary contact person is not available, I am the alternate contact person and may be reached during business hours at (502) 564-7488. My residence telephone number is (606) 263-4092. Information may also be sent to the Commission's offices on Fax number (502) 564-1582. However, notification to the Commission's voice mailbox or Fax number during non-office hours will not be considered proper notification.

You are requested to acknowledge receipt of this letter within **20 days of this date**. Further, you should disseminate this information to appropriate personnel within your organization.

Sincerely,

Claude G. Rhorer, Jr., Director
Division of Engineering and Services

CGR:MMM:rl

Attachment

safe location of equipment and wiring when on a customer's premises.

(d) The utility shall inspect utility buildings for compliance with safety codes at least annually.

(e) The utility shall inspect construction equipment for defects, wear and operational hazards at least quarterly.

(f) Aerial inspections shall not be used as the sole basis for evidence of compliance with commission regulations.

(8) Sewage Utility Inspection. Each sewage utility shall make systematic inspections of its system in the manner set out below to insure that the commission's safety requirements are being met. Such inspections shall be made as often as necessary but not less frequently than is set out below for the various types of inspections, or as otherwise required in 807 KAR 5:071.

(a) The utility shall annually inspect collecting sewers and manholes on a scheduled basis unless conditions warrant more frequent inspections.

(b) The utility shall weekly inspect all mechanical equipment unless otherwise authorized by the commission.

Section 26. Reporting of Accidents, Property Damage or Loss of Service. (1) Within two (2) hours following discovery each utility, other than a natural gas utility, shall notify the commission by telephone or electronic mail of any utility related accident which results in:

(a) Death; or shock or burn requiring medical treatment at a hospital or similar medical facility, or any accident requiring in-patient overnight hospitalization;

(b) Actual or potential property damage of $25,000 or more; or

(c) Loss of service for four (4) or more hours to ten (10) percent or five hundred (500) or more of the utility's customers, whichever is less.

(2) A summary written report shall be submitted by the utility to the commission within seven (7) calendar days of the utility related accident.

(3) Natural gas utilities shall report utility related accidents in accordance with the provisions of 807 KAR 5:027.

Section 27. Deviations from Regulation. In special cases, for good cause shown, the commission may permit deviations from this regulation.

Section 28. 807 KAR 5:008, Winter Hardship Reconnection of Residential Electric and Gas Service, is hereby repealed. (Eff. 2-26-92)

Home ?.../ Holiday ...

P. S. C.
ACCIDENT AND TROUBLE REPORT FORM

TODAY'S DATE 1-15-96 TIME 1:50 P.M.

COMPANY Union Light Heat and Power

PERSON REPORTING INCIDENT: NAME: Don Welch

TITLE: Senior Safety Engineer

ADDRESS: Cinn - Ohio

PHONE NO: (513) 287-2980

* * * * *

ACCIDENT DESCRIPTION: Steven Carpenter was cleaning ice out of Gutters with metal pole 11 to 12 Ft long contacted 7200 overhead line - Taken to St. Eliz. Hosp. Stable Cond.

VICTIMS NAMES: Steven Carpenter SEX M AGE 49 DEATH ___ INJURY ✓

SEX ___ AGE ___ DEATH ___ INJURY ___

SEX ___ AGE ___ DEATH ___ INJURY ___

LOCATION OF ACCIDENT: ~~2234~~ 2264? Brice - Fort Mitchell - Ky 41017

TIME OF OCCURRENCE: Approx 3:40 P.M. (1-14-96)

* * * * *

Up Date: 1-15-96
~~TROUBLE DESCRIPTION~~: Don Welch Called back 4:15 PM Mr Carpenter Passed away.

TIME OF OCCURRENCE:

TIME OF RESUMPTION OF NORMAL SERVICE:

NUMBER OF CUSTOMERS AFFECTED:

SIGNED Johnnie Lund

DATE 1-15-96